

COLLEGE HEIGHTS WEATHER INSTRUMENT MUSEUM



DR. L. MICHAEL TRAPASSO, CURATOR
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DEPARTMENT OF GEOGRAPHY AND GEOLOGY
WESTERN KENTUCKY UNIVERSITY
1906 COLLEGE HEIGHTS BOULEVARD #31066
BOWLING GREEN, KY 42101-1066

METEOROLOGY LAB MANUAL

WILLARD COCKRILL
SEPTEMBER 1966

Western Kentucky University

NAME _____
SECTION _____

METEOROLOGY 121 LABORATORY EXERCISES



By
L. Michael Trapasso
Glen Conner

DEPARTMENT OF GEOGRAPHY AND GEOLOGY
WESTERN KENTUCKY UNIVERSITY

INTRODUCTORY METEOROLOGY
LABORATORY MANUALS



ANEROID BAROMETER



DRAWING TOOLS
FOR MAP-MAKING



PHOTOGRAPHIC SLIDES

PROJECTOR





The WeatherCycler

For Interpreting and Forecasting Your Weather

The Weather School
Brookport, NY 14420-0750

INSTRUCTIONS:
Consult the label on the WeatherCycler weather map and push the slide until it is in position to show desired level showing your location in the HIGH or LOW affecting your weather. The Surface Weather Map and the windlines above it describe your weather. If HIGH, it indicates your location in the HIGH or LOW. Use the windlines below if HIGH or LOW indicates your position.

To forecast your weather, push the slide up slowly to represent movement of air (at LOW). Your changing map location shows how your weather will develop. The next printed position shows what your weather may be in about 12 hours. Check your forecasts by following the instructions on back.

COMMON WEATHER MAP SYMBOLS

ISOBARS join lines to represent equal pressure with the same air pressure.

SHADED AREAS precipitation can or snow.

Center of LOW

WEATHER STATION
Indicates direction (dots) which wind is blowing.
Describes WIND SPEED.
Pressure in inches: 1.2 = 12 knots, 1.0 = 10 knots.
Amount of Cloud Cover:
0 = All clouds
1 = 1/8 or less
2 = Completely Overcast
3 = Overcast
EXAMPLE: Southeast wind at 15 knots Overcast.

FRONTS form the boundary between neighboring air masses (AIRS) separated and held apart by strong surface forces. Symbols indicate kind of front and direction of movement.

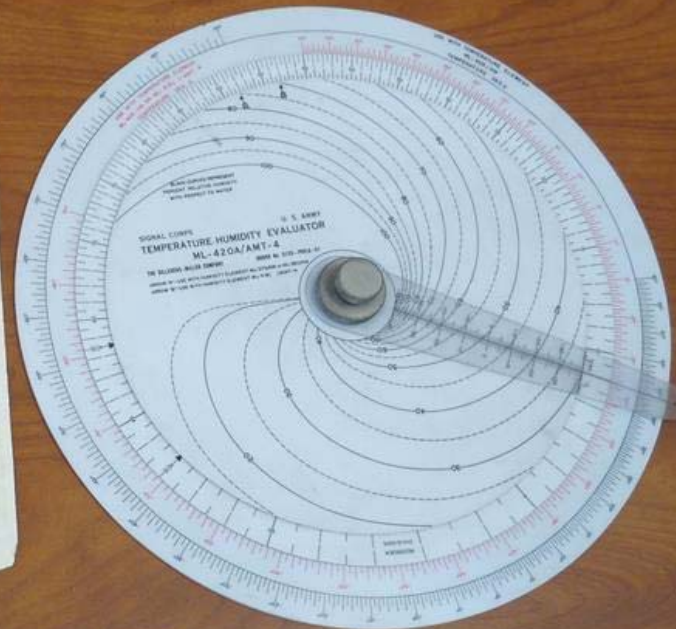
Cold Front Warm Front Stationary Front

Weather at A

Surface Weather Map

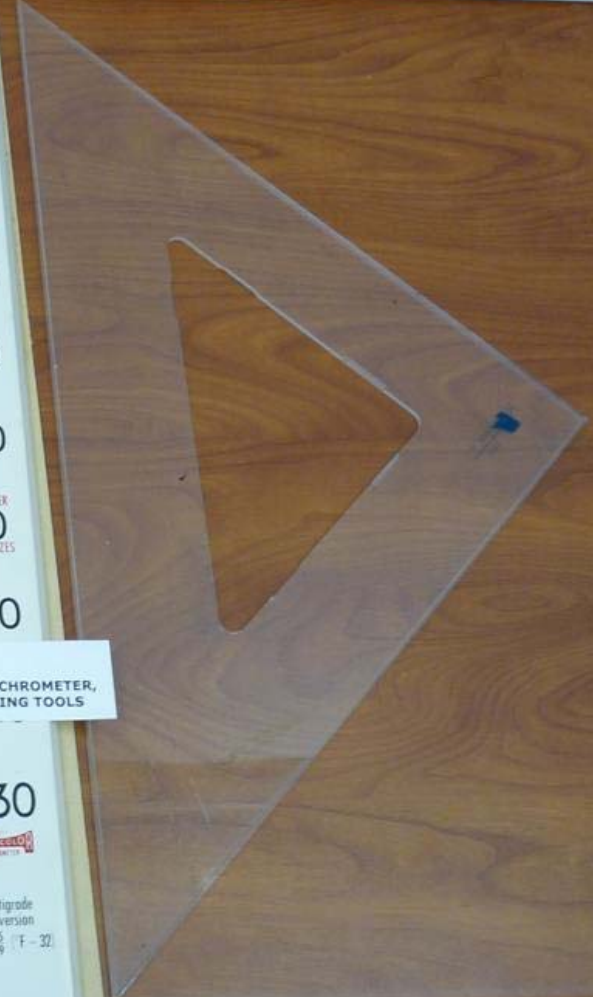
Weather at B

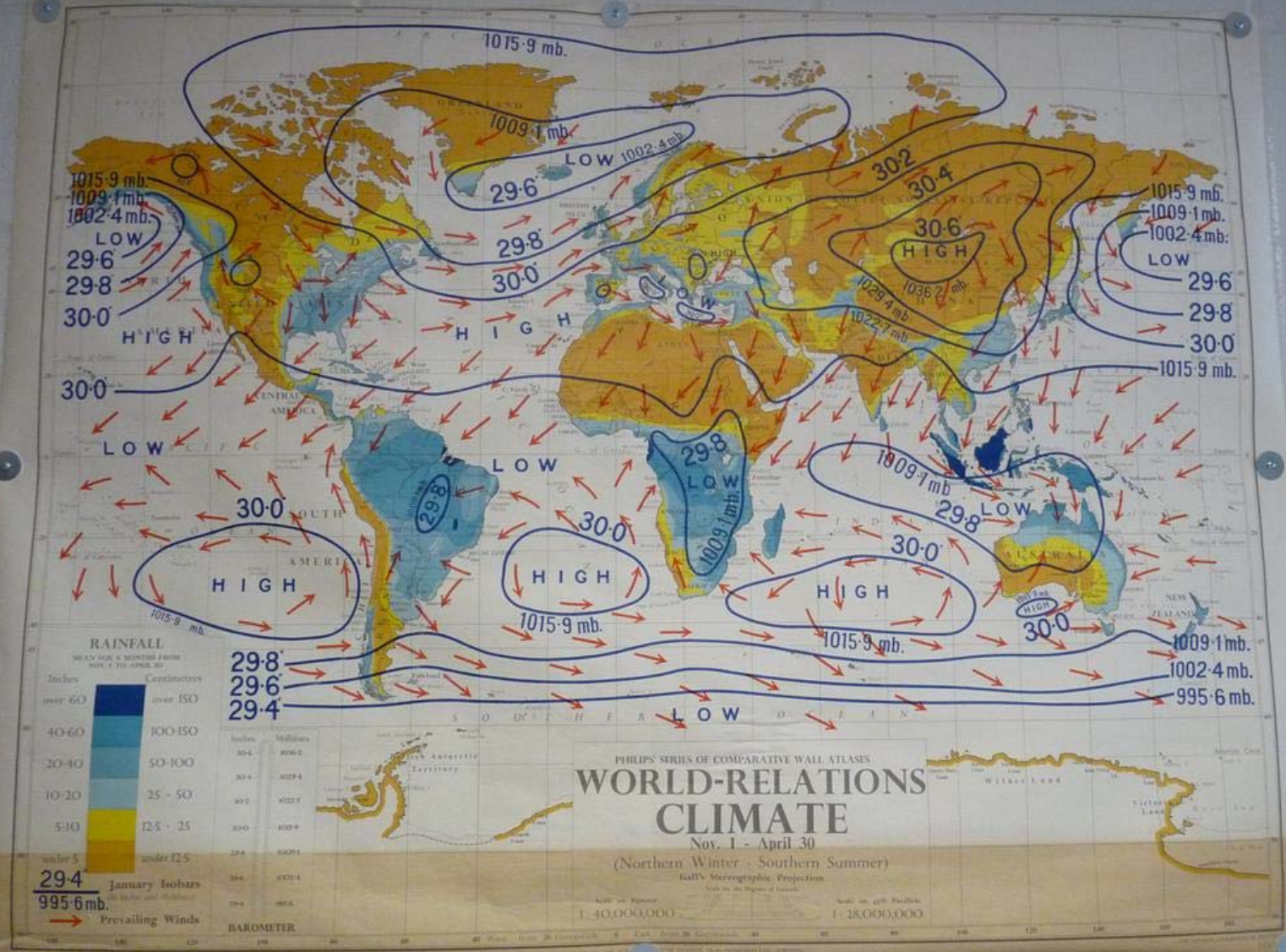
MODELS AND CALCULATORS
FOR LABORATORY USE



MODELS AND CALCULATORS
FOR LABORATORY USE

CHALKBOARD COMPASS
Taylor











IMAGES OF THE PAST

DR. JUDSON RAY GRIFFIN, First Director
of the College Heights Weather Station



MR. W. WILLARD COCKRILL, Longest Height as
Director of the College Heights Weather Station



DR. L. MICHAEL TRAPASSO, Last Director
and Curator of the College Heights Weather
Instrument Museum



FIRST WEATHER DATA REPORT
from College Heights Weather
Station, 1 March 1932

[illegible]

WEATHER INSTRUMENTS ON THE ROOF
(EXT Building)



INTERIOR OF THE COLLEGE HEIGHTS
WEATHER STATION



THE OLD METEOROLOGY LABORATORY



FIRST AUTOMATED WEATHER STATION
- CMU Waste Water Treatment Plant



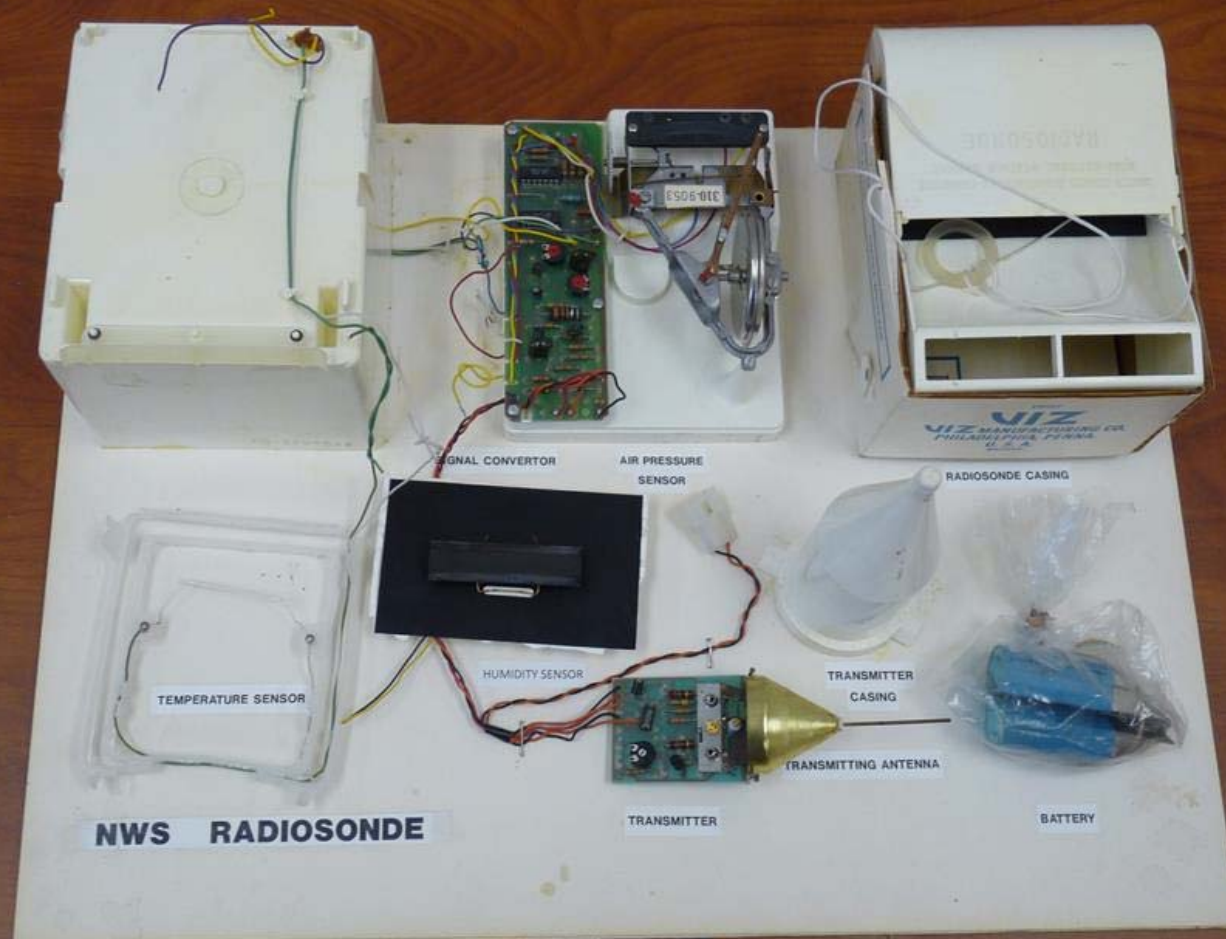




RADIOSONDE
Old Model
Bendix-Friez



RADIOSONDE
U.S. Army
Signal Corps



NWS RADIOSONDE

RADIOSONDE
Component Parts

TOP
FRAGILE
HANDLE WITH CARE

NOTICE TO FINDER

THIS INSTRUMENT IS THE PROPERTY
OF THE UNITED STATES GOVERNMENT
NOAA-NATIONAL WEATHER SERVICE

THIS WEATHER INSTRUMENT KNOWN AS A
"RADIOSONDE" WAS RELEASED TO MEASURE THE
TEMPERATURE, PRESSURE, HUMIDITY AND WINDS AT
VARIOUS HEIGHTS ABOVE THE GROUND. THE
RADIOSONDE OPERATED AS A RADIO TRANSMITTER
WHICH WAS TRACKED TO A HEIGHT ABOVE 17 MILES. IF
FOUND IN THE UNITED STATES, MAIL AT ANY POST
OFFICE OR HAND TO YOUR RURAL CARRIER. NO
STAMPS ARE NEEDED.
SEE OPPOSITE SIDE OF THIS RADIOSONDE FOR MAILING
INSTRUCTIONS.
YOUR ASSISTANCE WILL PERMIT THE WEATHER SERVICE
TO USE THIS RADIOSONDE AGAIN.

RADIOSONDE
New Model
Unused



WINDMILL
WINDMILL WINDMILL, INC.
WINDMILL, N.Y.

424



DISPLAY CASE WITH
FOUR ANALOG GAUGES FOR
WIND, TEMPERATURE, HUMIDITY,
RELATIVE HUMIDITY,
WIND DIRECTION, AND
WIND SPEED.



WINDMILL
WINDMILL WINDMILL, INC.
WINDMILL, N.Y.

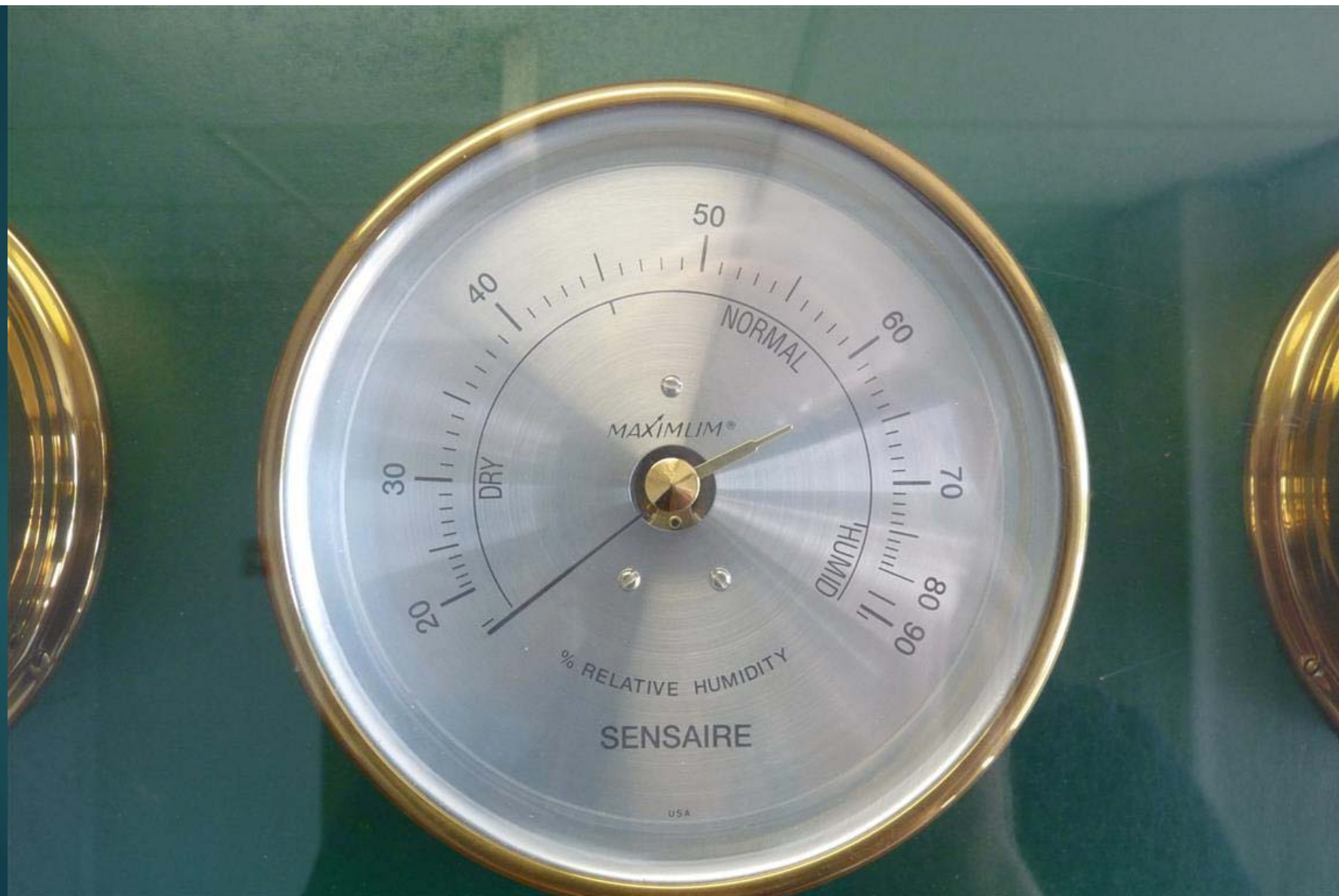






WIND VANE
WIND & WEATHER, INC.
BROOKLYN, N.Y.











ALTIMETER
Pocket Model
Made in Germany





SOLAR RADIATION SENSOR
Julien P. Friez & Sons
Baltimore, MD





JORDAN SUNSHINE RECORDER
Negretti & Zambra
Made in England

SLING PSYCHROMETER
Wexler Instruments Co.
USA



PROBE THERMOMETER
Wexler Instruments Co.
USA





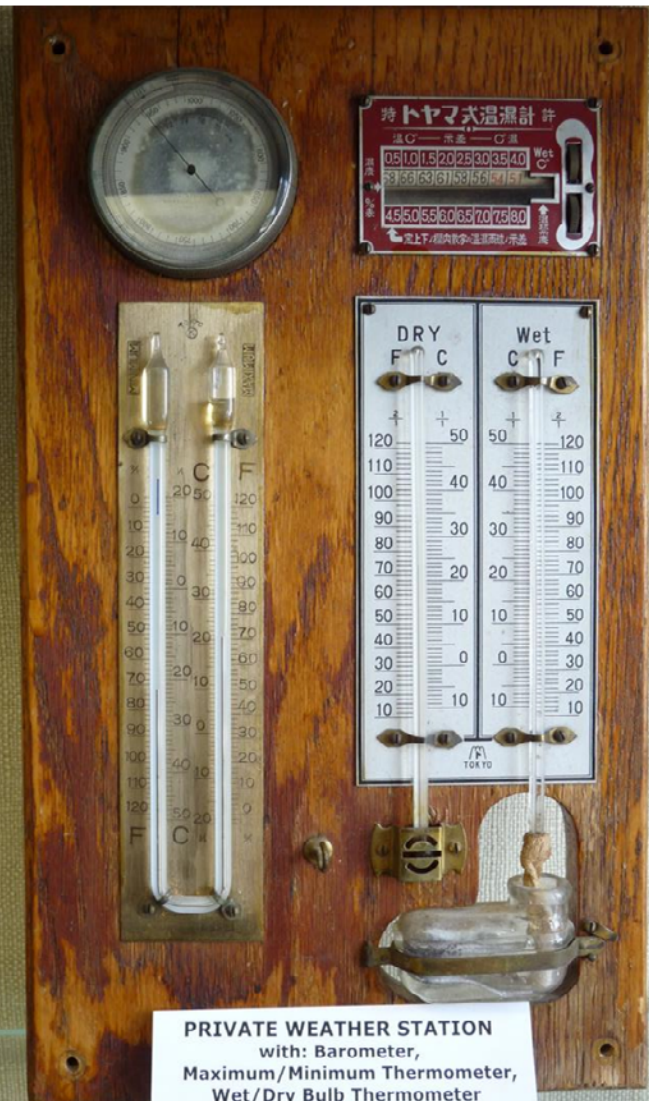
**CASELLA CLOUD CHAMBER
FOR CLASSROOM DEMONSTRATION**
London, England



CAPE COD WIND INDICATOR
Harwichport, MA



RELATIVE HUMIDITY INDICATOR
Bacharach Instrument Co.
Pittsburgh, PA



PRIVATE WEATHER STATION
with: Barometer,
Maximum/Minimum Thermometer,
Wet/Dry Bulb Thermometer
Made in Toyko, Japan



PRIVATE WEATHER STATION
with: Clock and Wind Direction
Made in Tokyo, Japan



ELECTRICAL WIRING FOR
HOME WEATHER STATION ABOVE



SIX THERMOMETER

This thermometer was in use inside the instrument shelter at the College Heights Weather Station from 1930 until 1965.



**TEMPERATURE & RELATIVE
HUMIDITY INDICATOR**
Bacharach Instrument Co.
Pittsburgh, PA







MAP/IMAGE FACSIMILE
RECORDER
Alden Electronics
Westborough, MA



REMOTE RADAR
Telephone Connection





Model 4000
SPECIALIZING IN METROLOGY
CD-Metrolabs Systems
1-800-605-6052
P.O. Box 10000, Lincoln, NE 68501
TEL: 402/441-1111 FAX: 402/441-1112
www.cd-metrolabs.com



GDS-E IR 202 HI 09/03/79 1200Z

DAVID

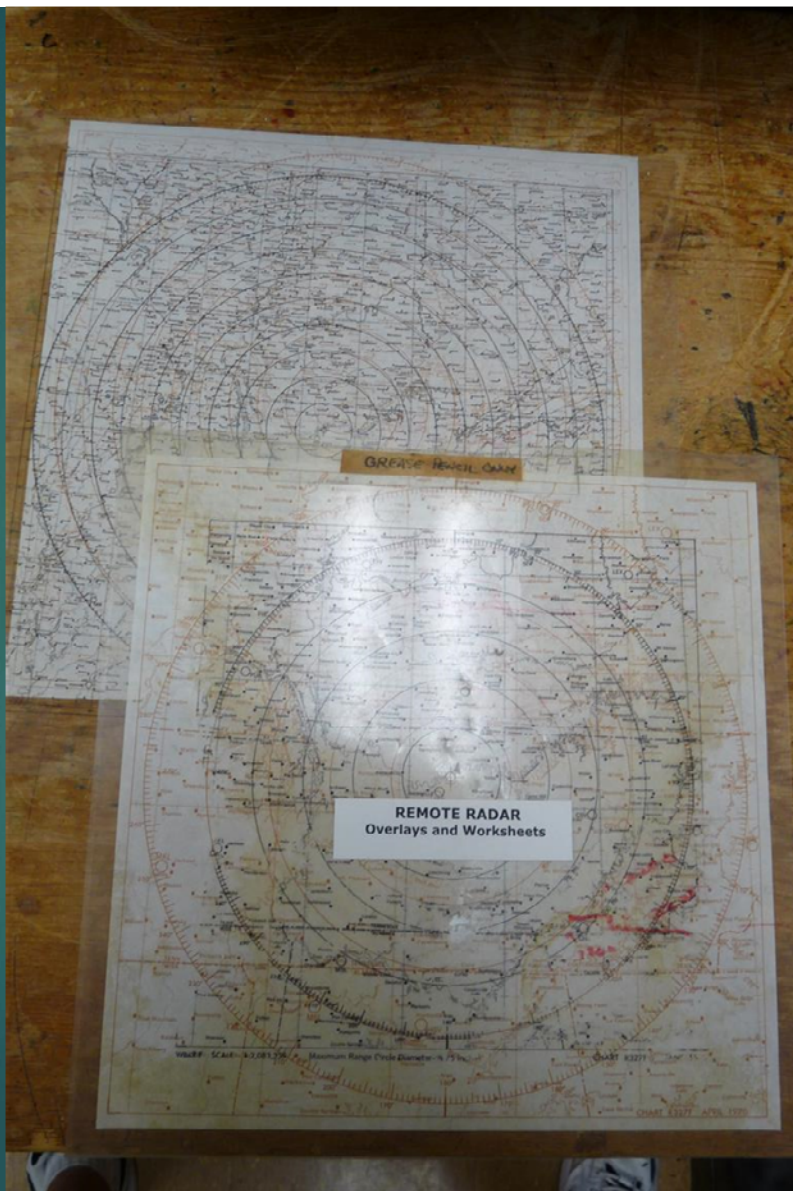
700 MB ANALYSIS

GDS-E IR 202 HI 09/04/79 1200Z

DAVID

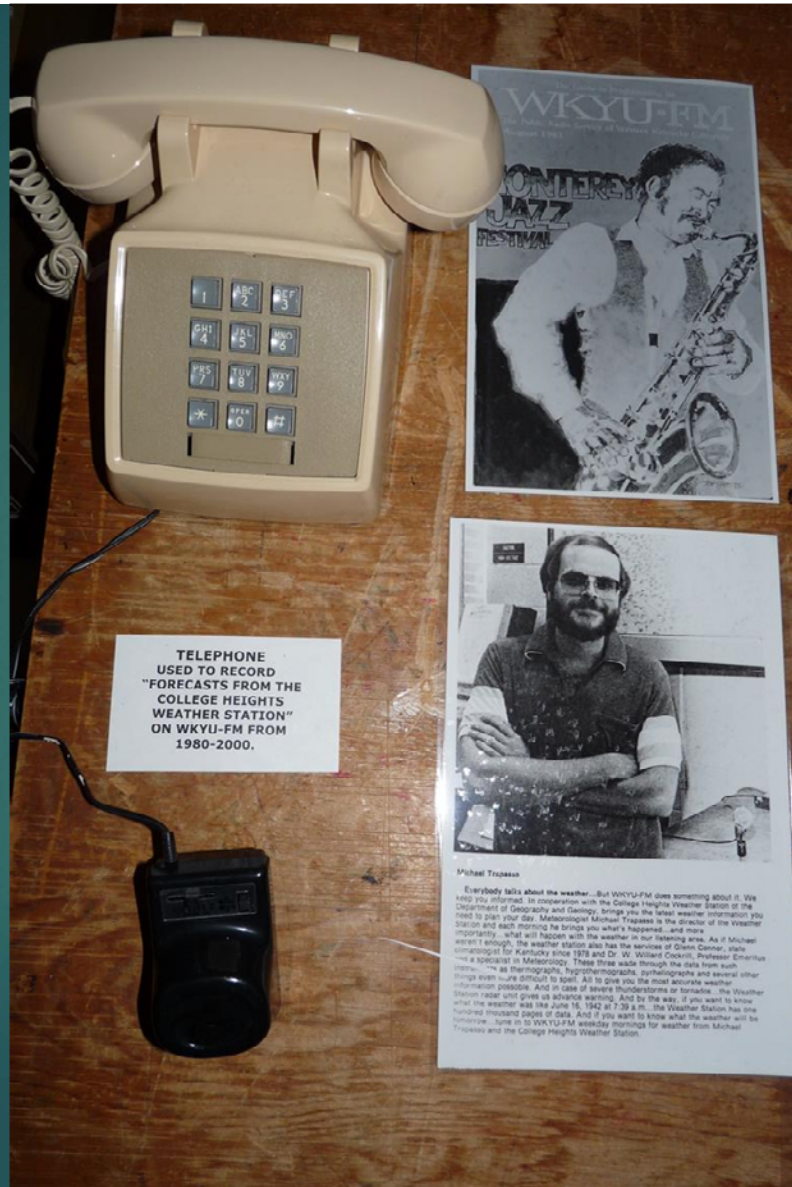
21Z TUE 3 SEP 1979

PROG

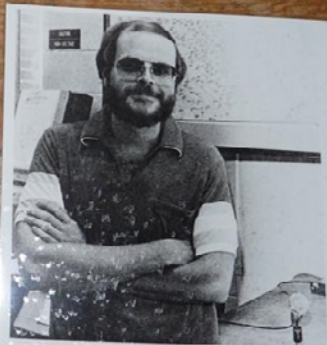


REMOTE RADAR
Overlays and Worksheets





TELEPHONE
USED TO RECORD
"FORECASTS FROM THE
COLLEGE HEIGHTS
WEATHER STATION"
ON WKYU-FM FROM
1980-2000.

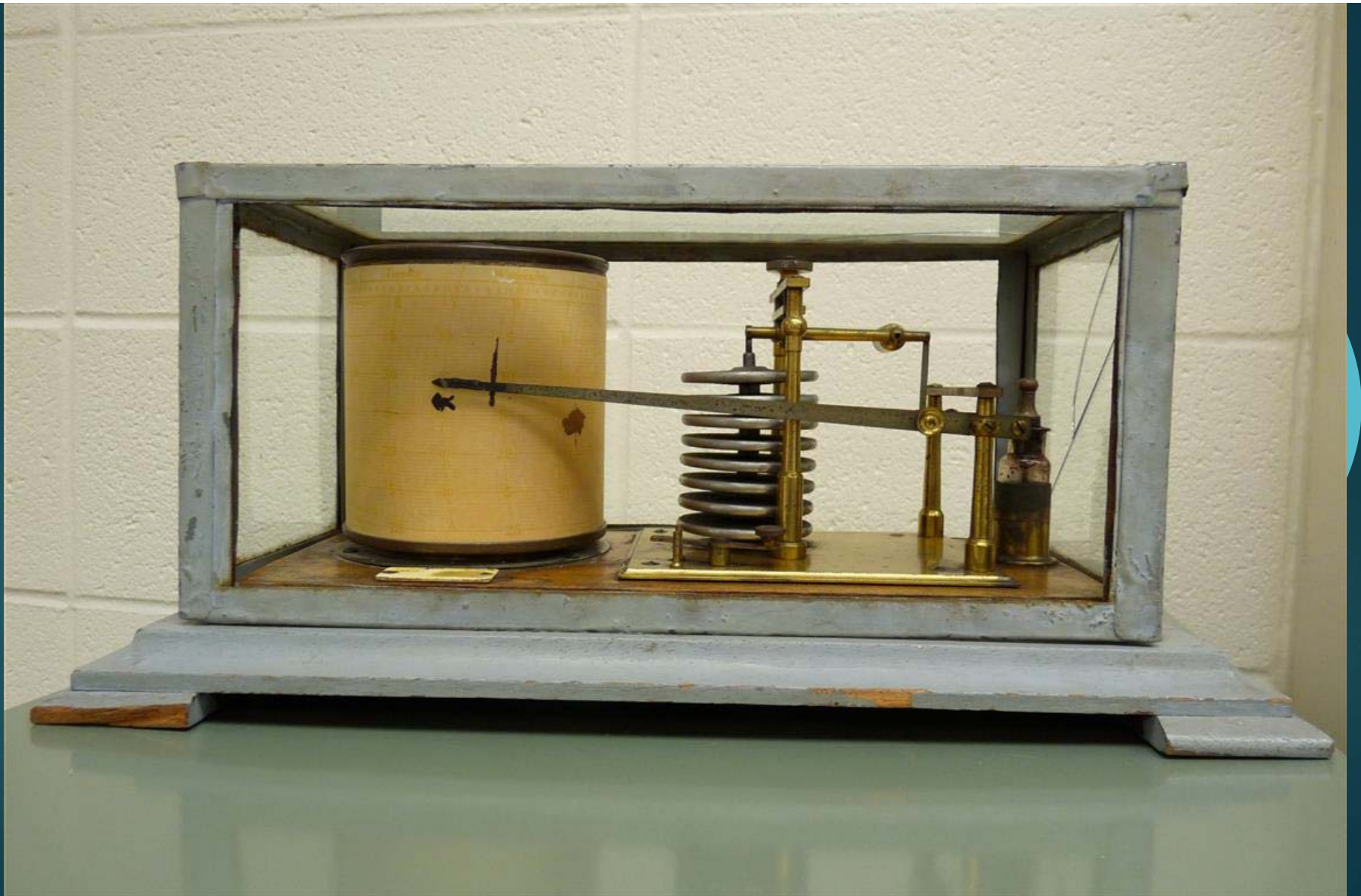


Michael Trappee
Everybody talks about the weather...but WKYU-FM does something about it. We keep you informed, in cooperation with the College Heights Weather Station of the Department of Geography and Geology, bring you the latest weather information you need to plan your day. Meteorologist Michael Trappee is the director of the weather station and each morning he brings you what's happened...and more importantly, what will happen with the weather in our listening area. As if Michael weren't enough, the weather station also has the services of Glenn Carter, state meteorologist for Kentucky since 1978 and Dr. W. Willard Coker, Professor Emeritus and a specialist in Meteorology. These three scribe through the data both such as thermographs, hygrothermographs, psychographs and several other things even more difficult to spell. All to give you the most accurate weather information possible. And in case of severe thunderstorms or tornadoes, the Weather Station read-out gives us advance warning. And by the way, if you want to know what the weather was like June 16, 1942 at 7:39 a.m., the Weather Station has one hundred thousand pages of data. And if you want to know what the weather will be tomorrow...tune in to WKYU-FM weekday mornings for weather from Michael Trappee and the College Heights Weather Station.













EVAPORATION RECORDER
Belfort Instrument Company

Used at College Heights Weather
Station until 1985.

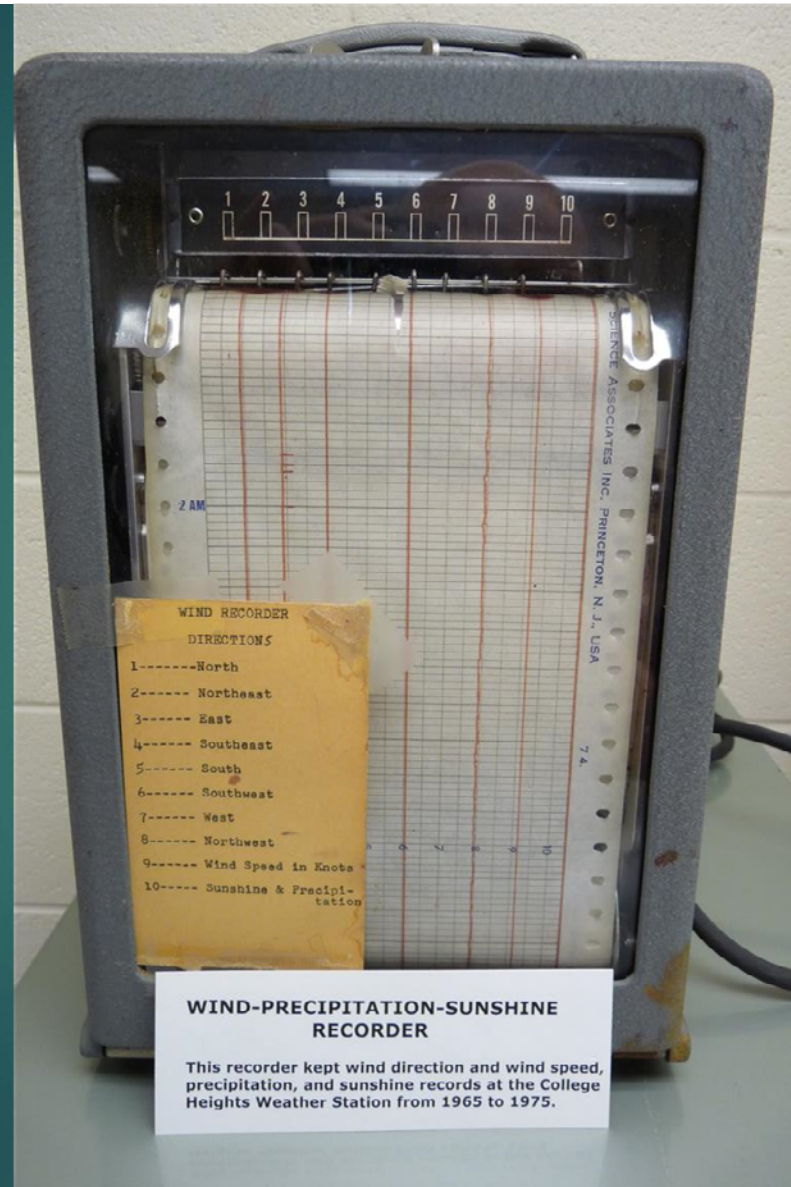


EVAPORATION RECORDER
Belfort Instrument Company

Used at College Heights Weather
Station until 1985.



HYGROTHERMOGRAPH



WIND RECORDER
DIRECTIONS

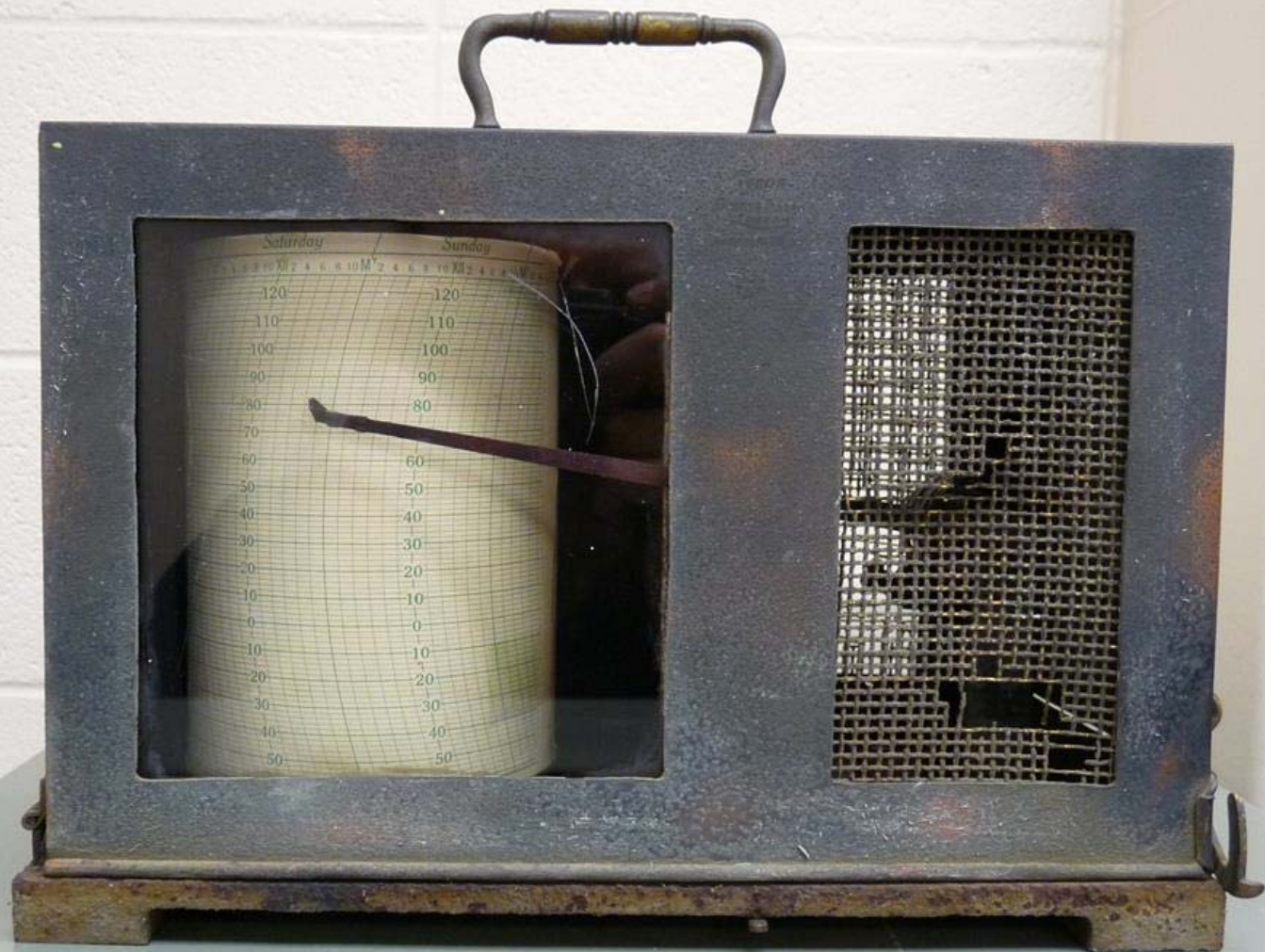
- 1-----North
- 2----- Northeast
- 3----- East
- 4----- Southeast
- 5----- South
- 6----- Southwest
- 7----- West
- 8----- Northwest
- 9----- Wind Speed in Knots
- 10----- Sunshine & Precipitation

WIND-PRECIPITATION-SUNSHINE
RECORDER

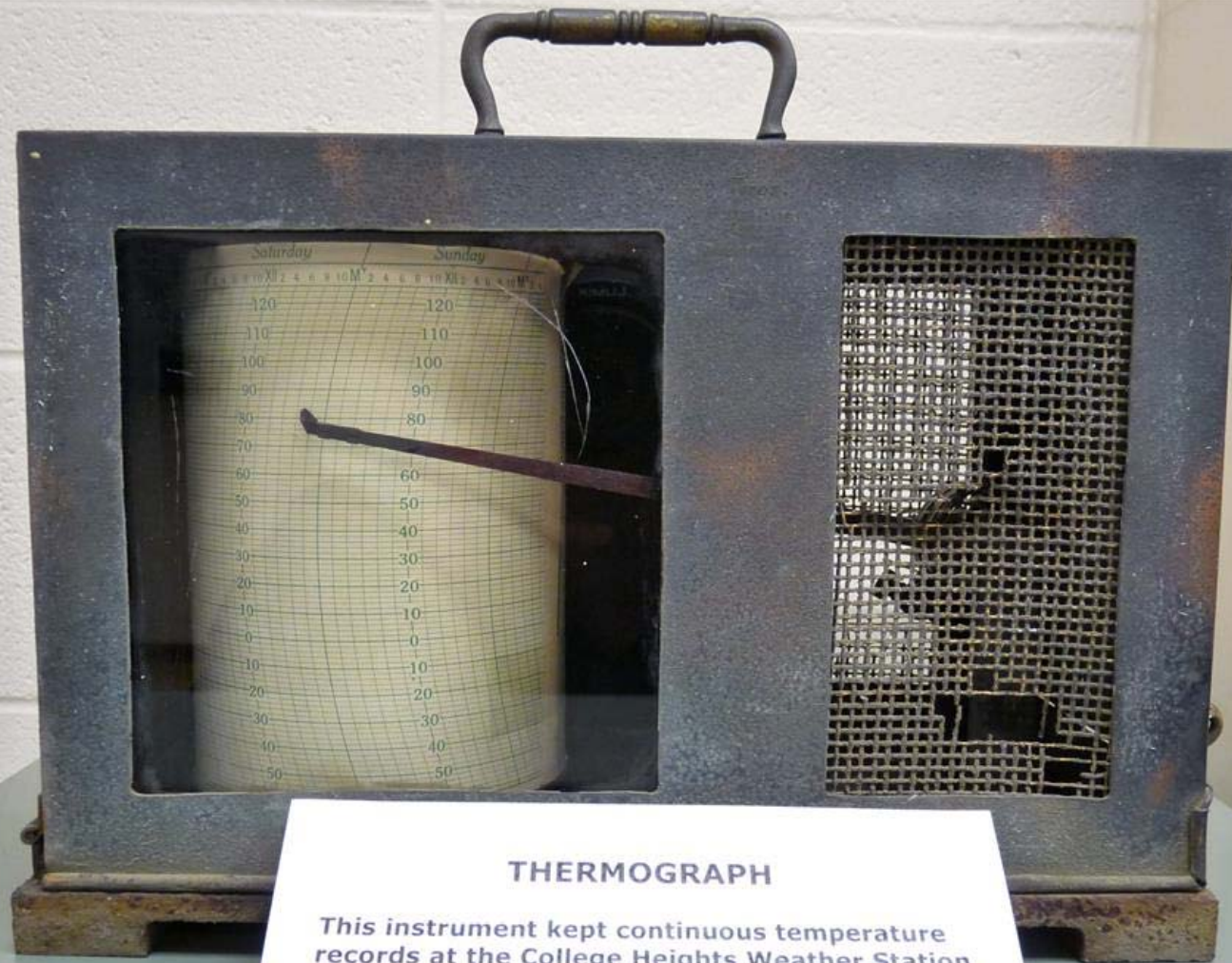
This recorder kept wind direction and wind speed, precipitation, and sunshine records at the College Heights Weather Station from 1965 to 1975.



HYGROTHERMOGRAPH
Bacharach Instrument Company
Pittsburgh, PA

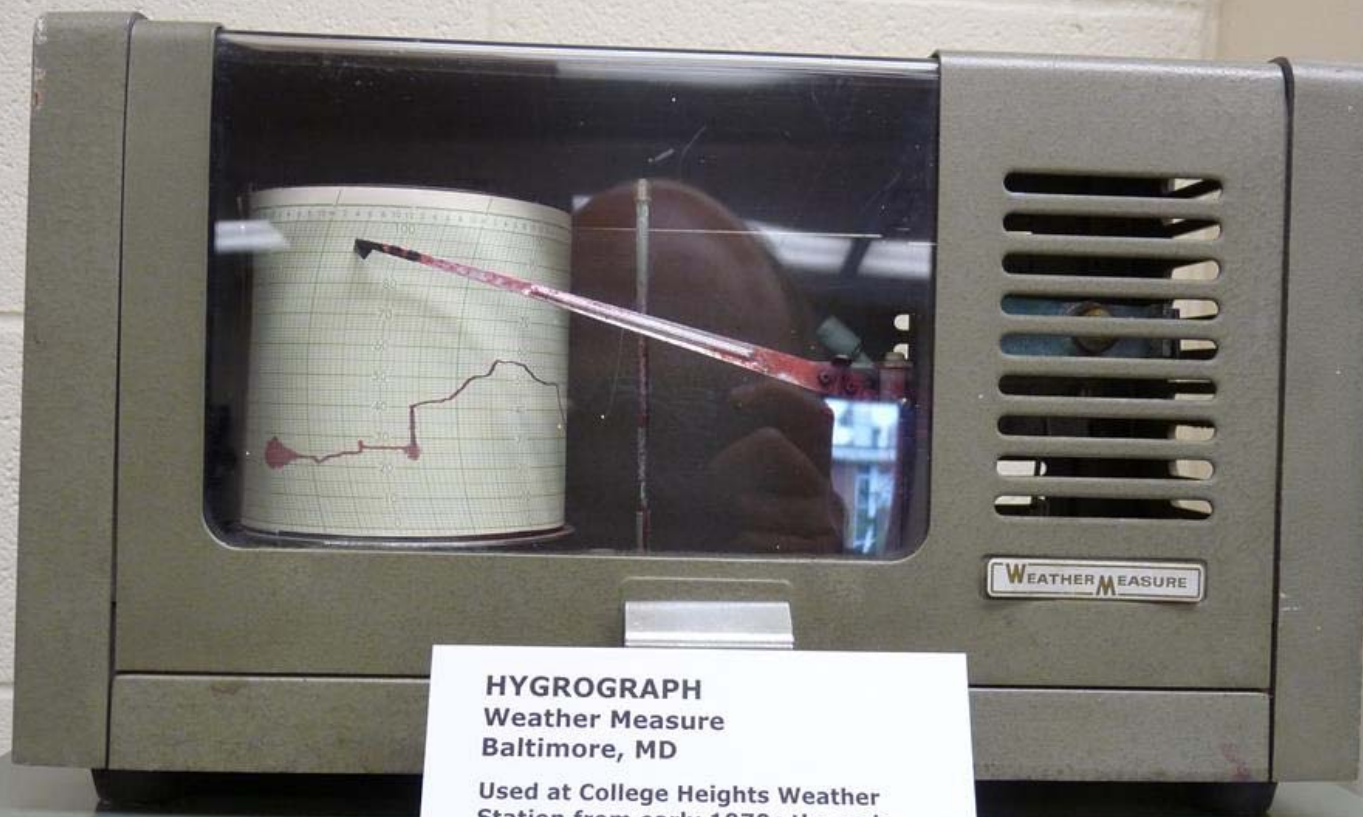






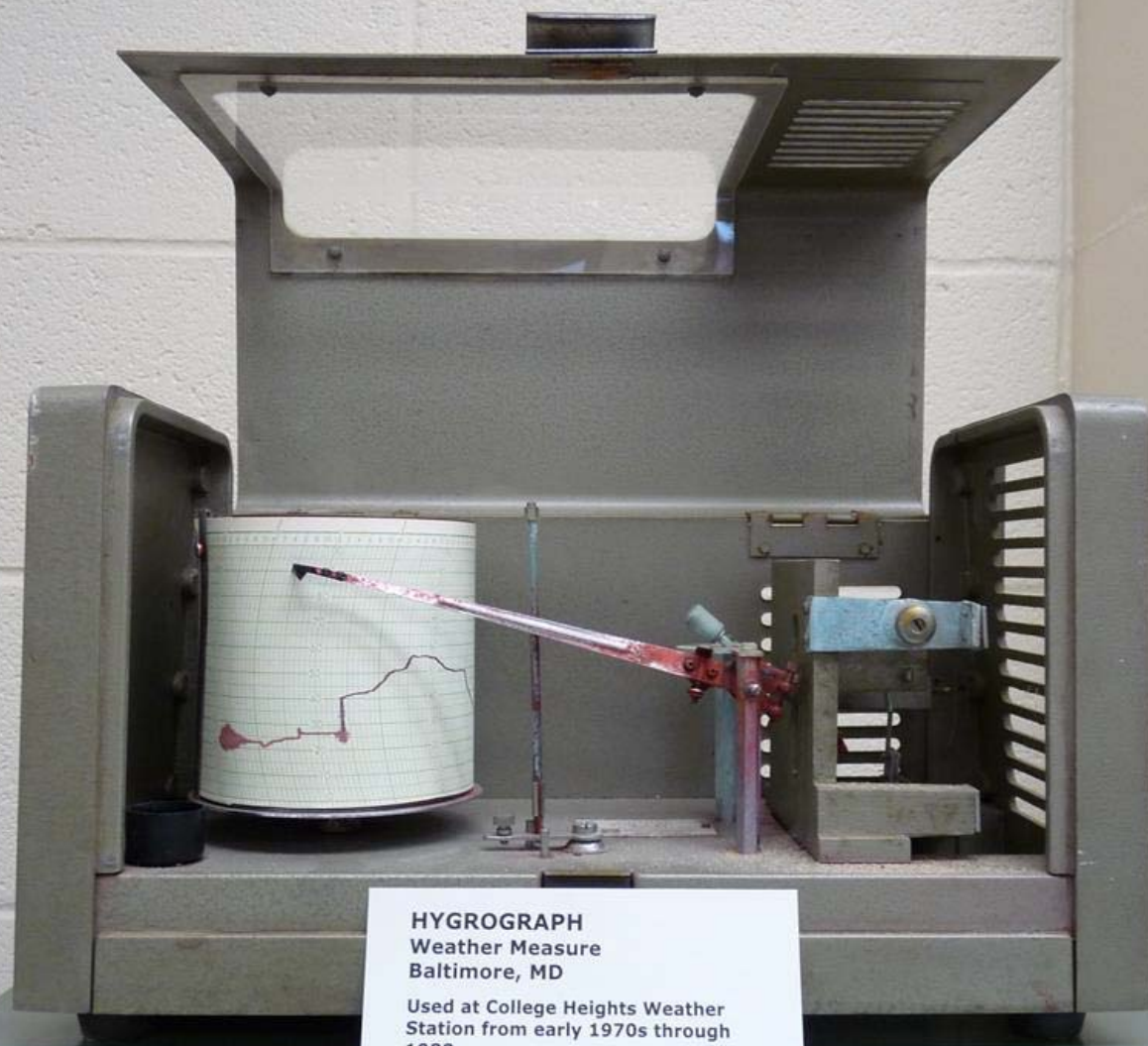
THERMOGRAPH

This instrument kept continuous temperature records at the College Heights Weather Station from 1930 to 1965.



HYGROGRAPH
Weather Measure
Baltimore, MD

Used at College Heights Weather
Station from early 1970s through
1988.



HYGROGRAPH
Weather Measure
Baltimore, MD

Used at College Heights Weather
Station from early 1970s through
1988.





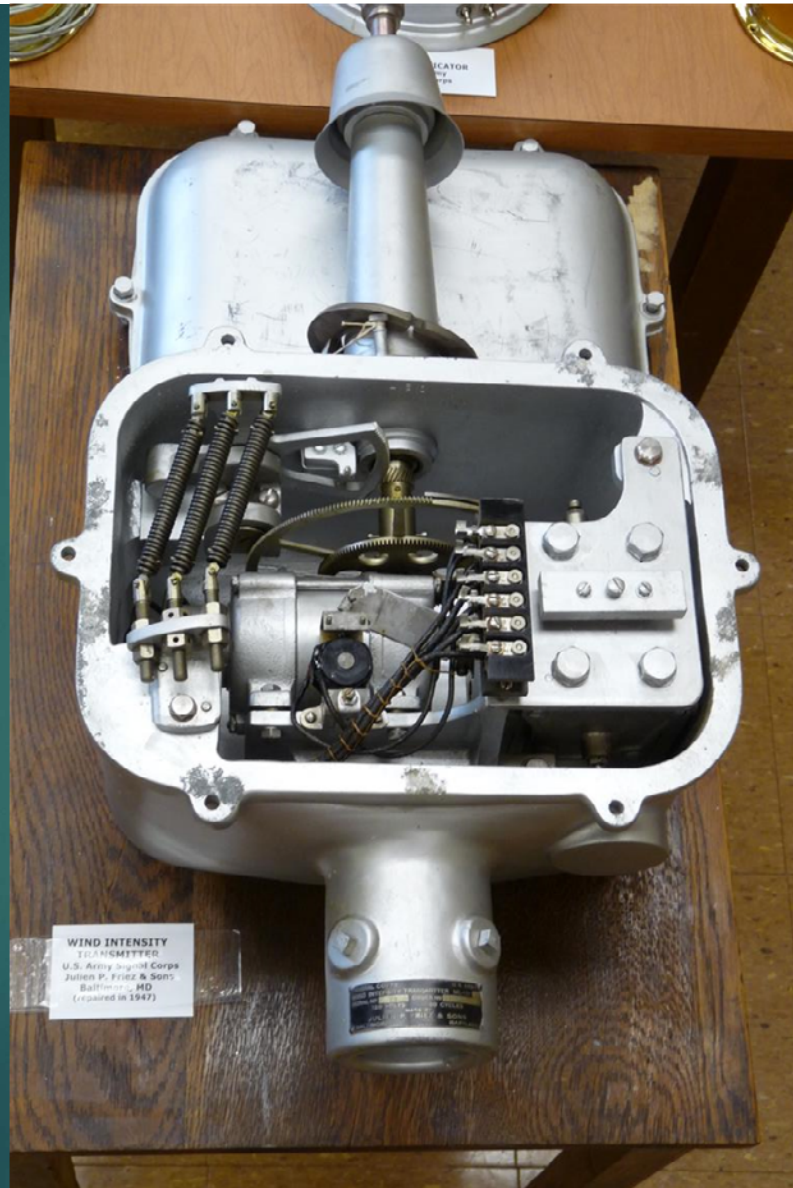
CIRCULAR WEATHER
DATA CALCULATOR



SLING PSYCHROMETER



WE-1000 - "INSLEY"
TRANSMITTER
U.S. Army Signal Corps
Patented by Arthur W. Insley
Baltimore, Md.
(Improved in 1947)









WIND INDICATOR
U.S. Army
Signal Corps

**WIND DIRECTION &
VELOCITY INDICATORS**
Science Associates, Inc.
Princeton, NJ

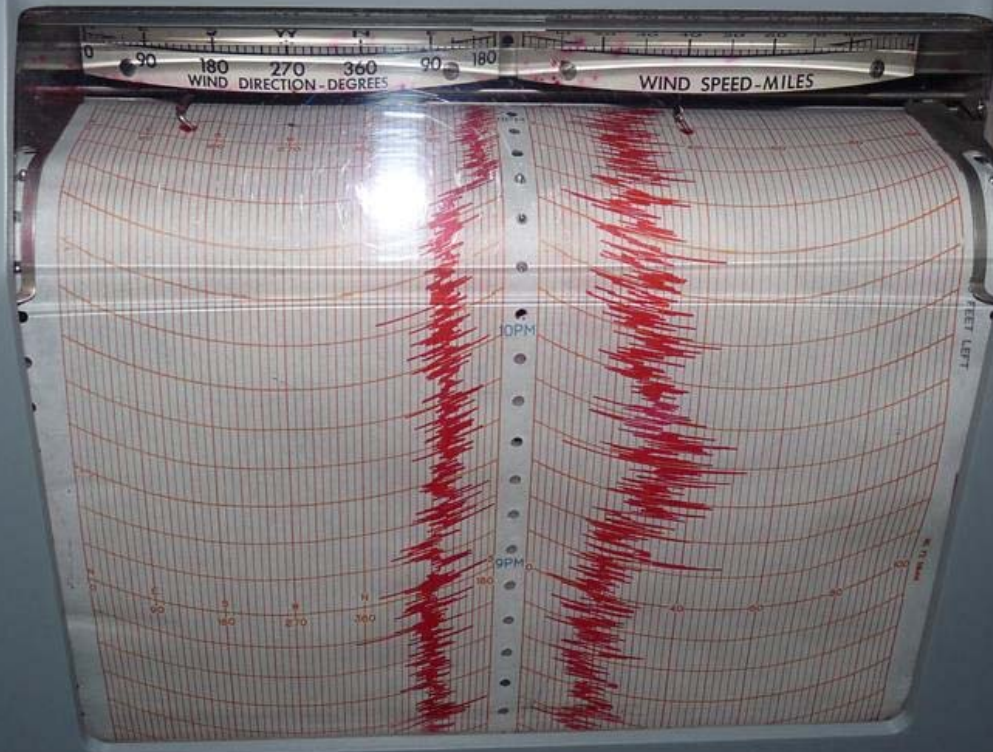




**WIND DIRECTION &
VELOCITY INDICATORS**
Science Associates, Inc.
Princeton, NJ



WIND DIRECTION &
VELOCITY RECORDER
Bendix, Corp.

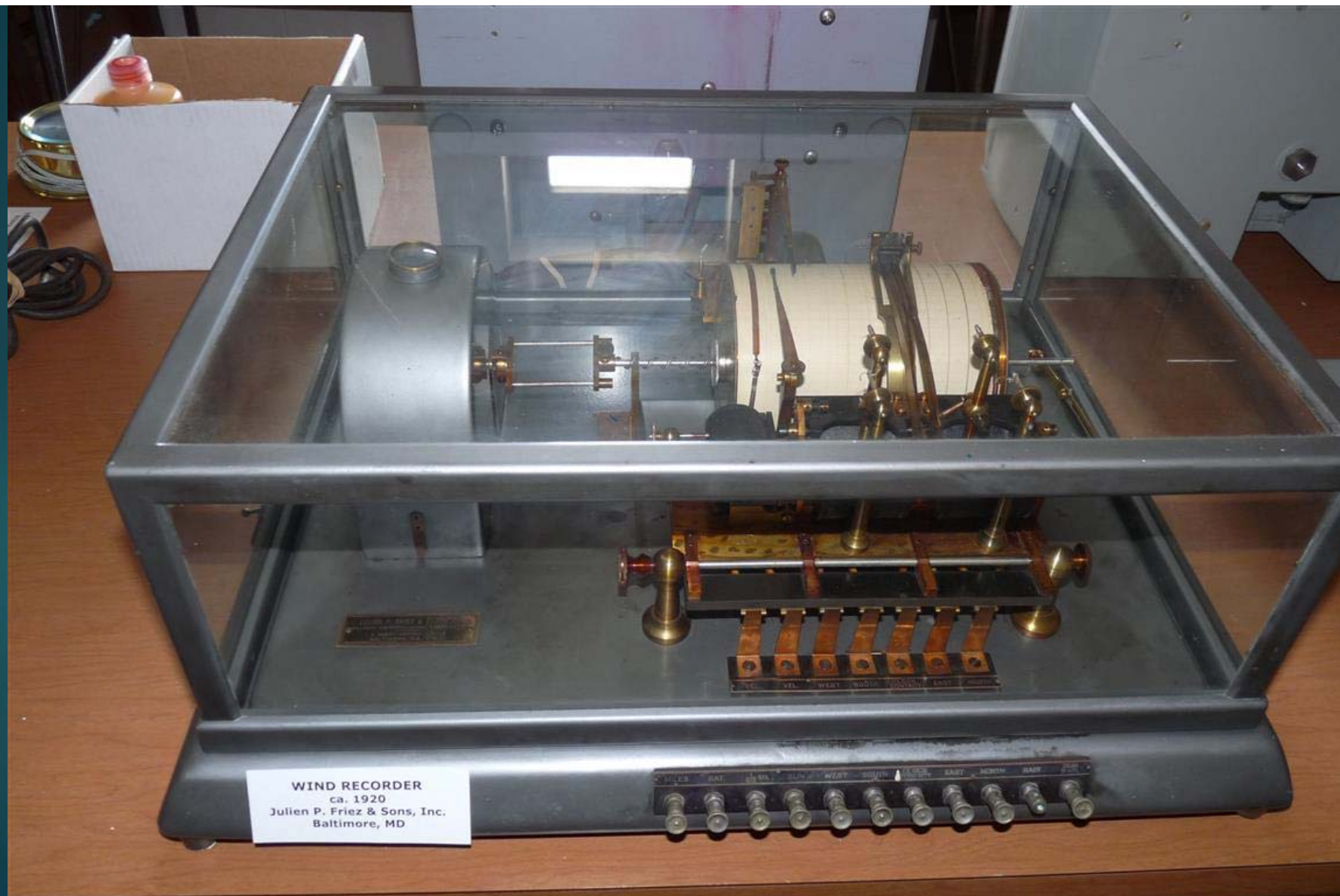


FRIEZ 141 DUAL RECORDER

INSTRUMENT RECORDING
FOR CLEANING AND P

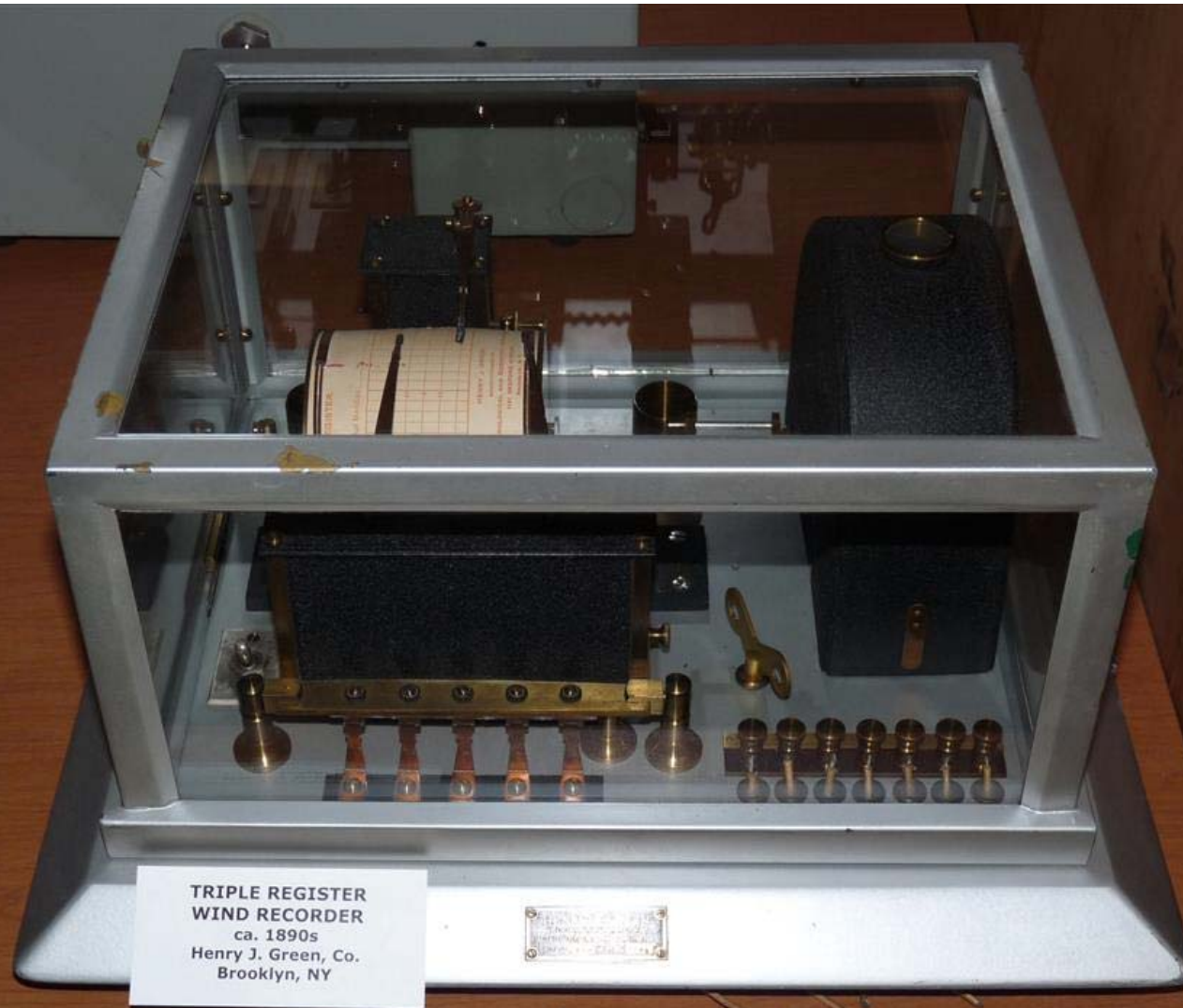


**INSTRUMENT RECORDING INK AND SUPPLIES
FOR CLEANING AND RELOADING THE PENS**



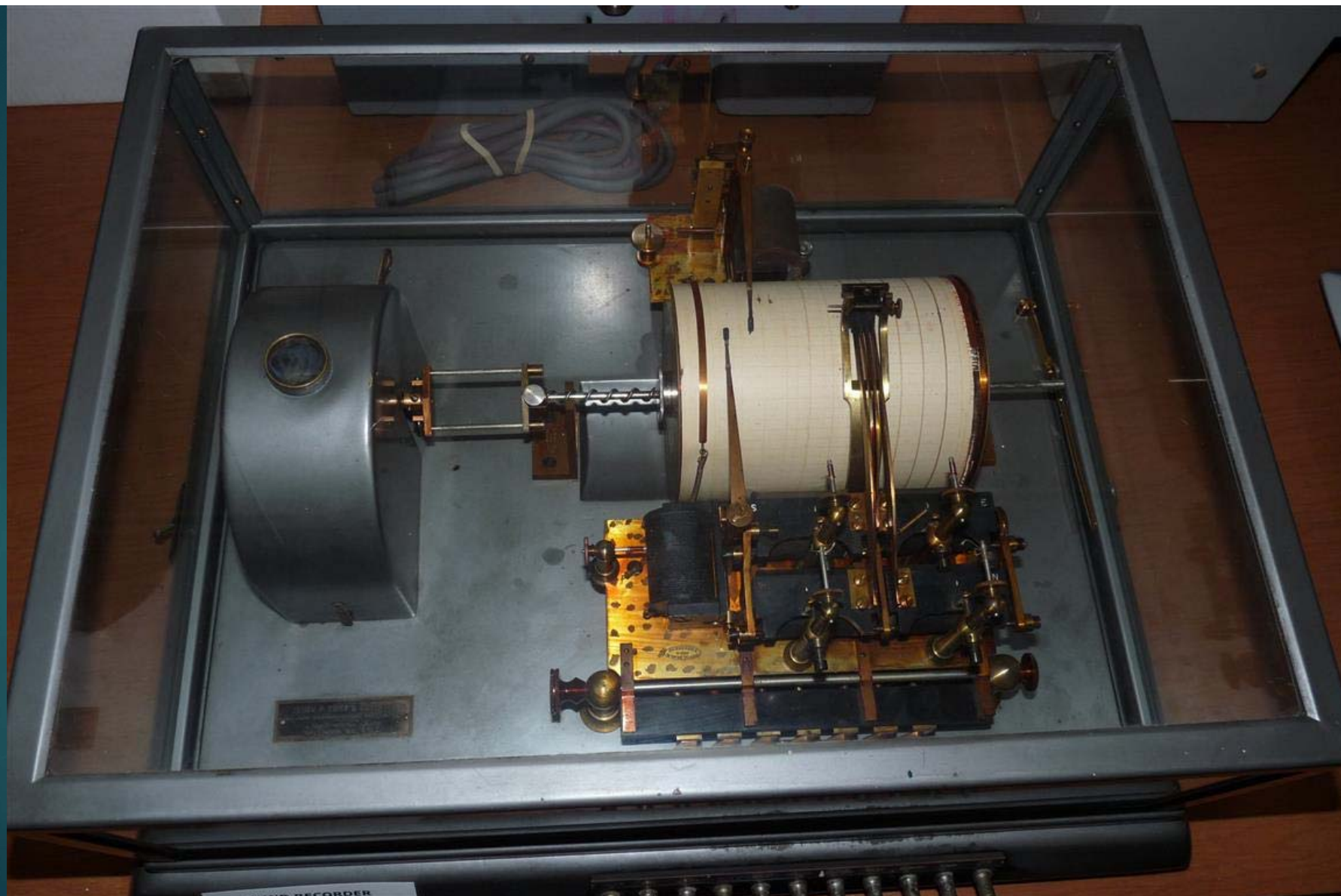
WIND RECORDER
ca. 1920
Julien P. Friez & Sons, Inc.
Baltimore, MD

WINDS BAR 100 MI. SUN WEST SOUTH EAST NORTH BAR 100 MI.
VEL. WEST SOUTH EAST NORTH

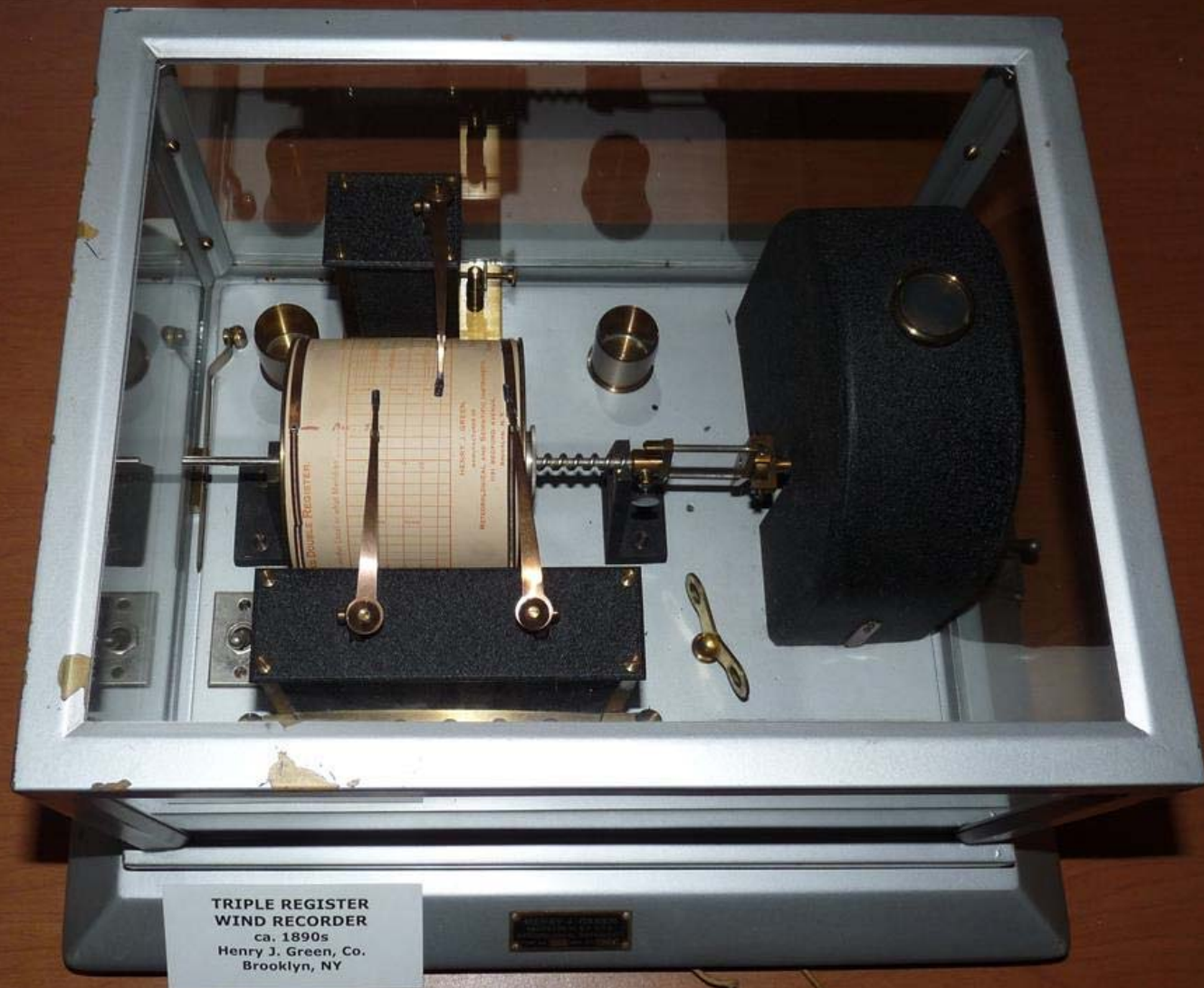


TRIPLE REGISTER
WIND RECORDER
ca. 1890s
Henry J. Green, Co.
Brooklyn, NY

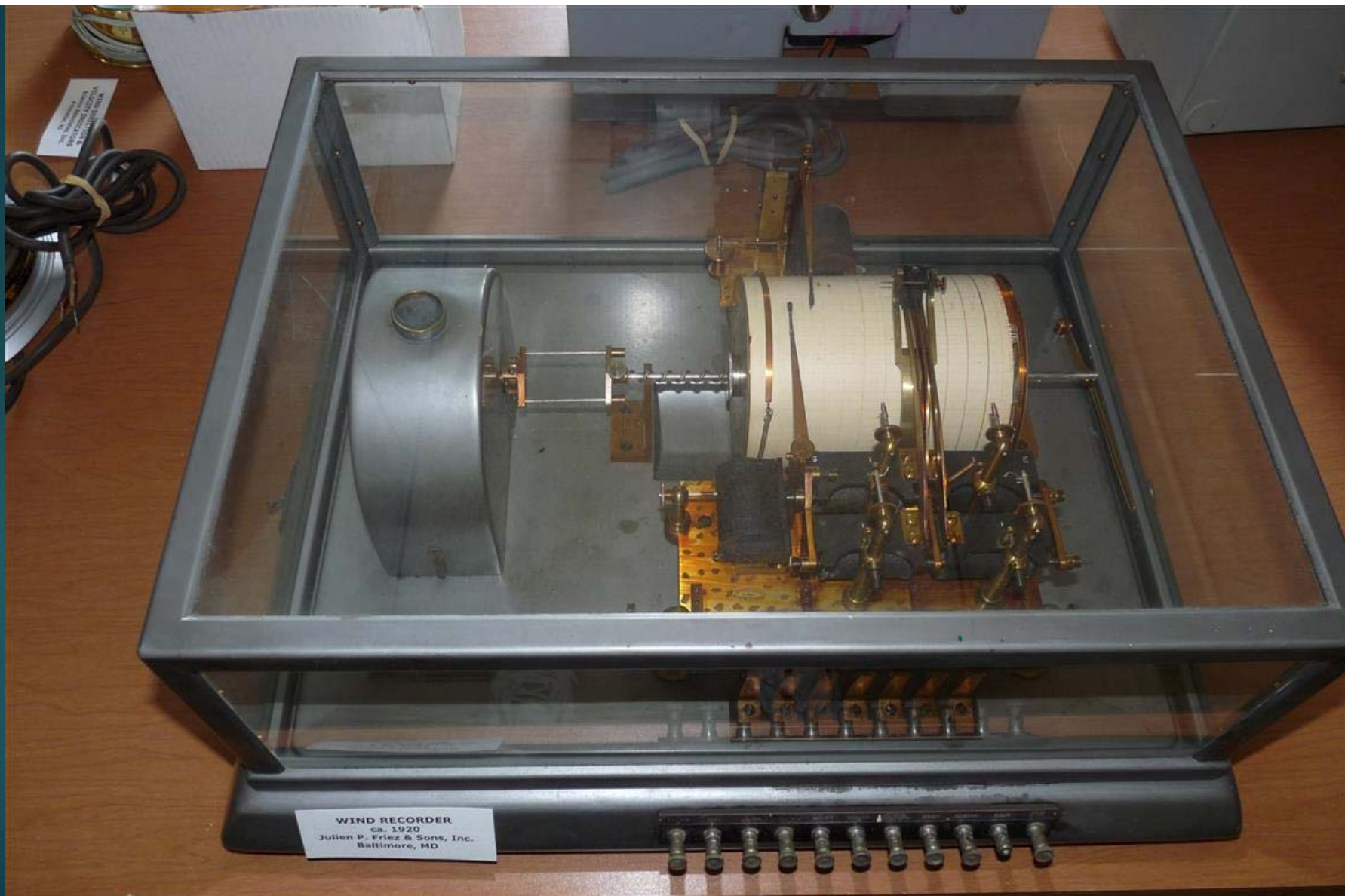




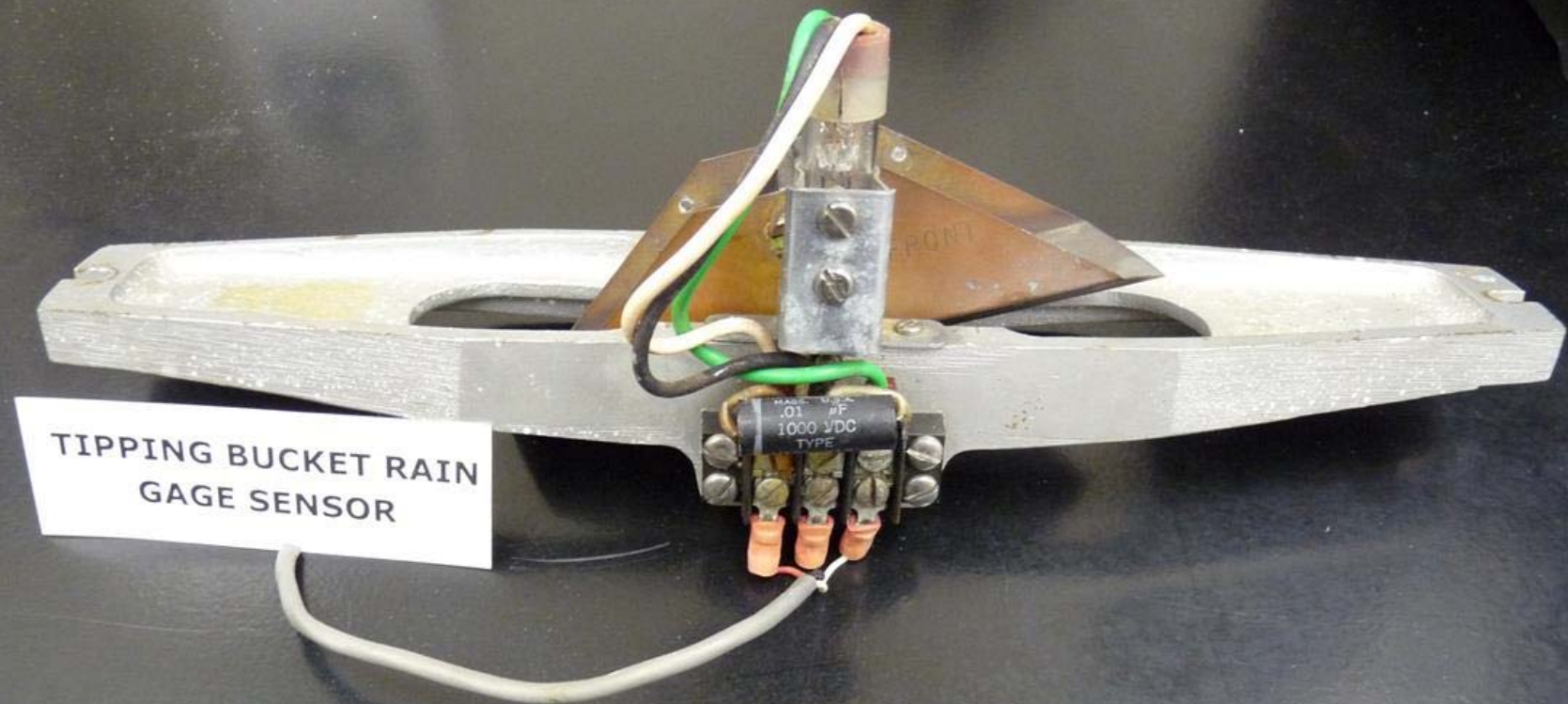
WIND RECORDER



TRIPLE REGISTER
WIND RECORDER
ca. 1890s
Henry J. Green, Co.
Brooklyn, NY

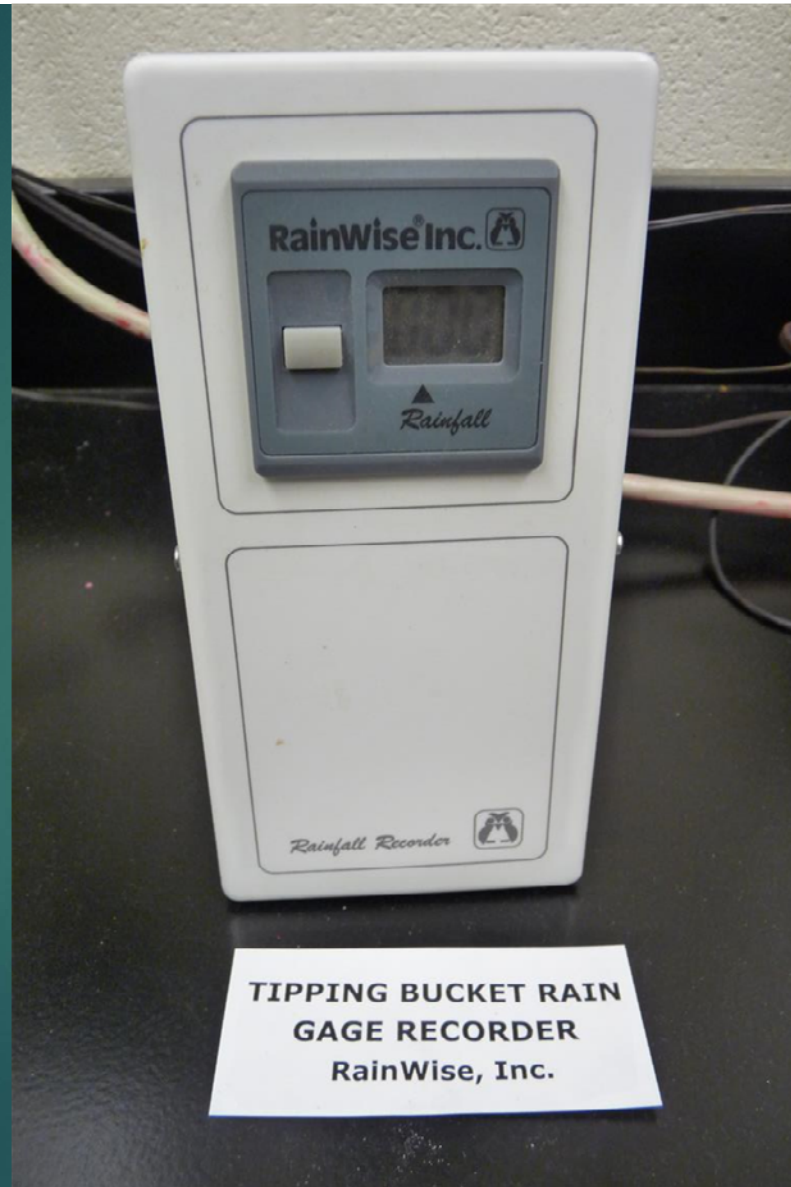


WIND RECORDER
ca. 1920
Julien P. Friez & Sons, Inc.
Baltimore, MD



TIPPING BUCKET RAIN
GAGE SENSOR

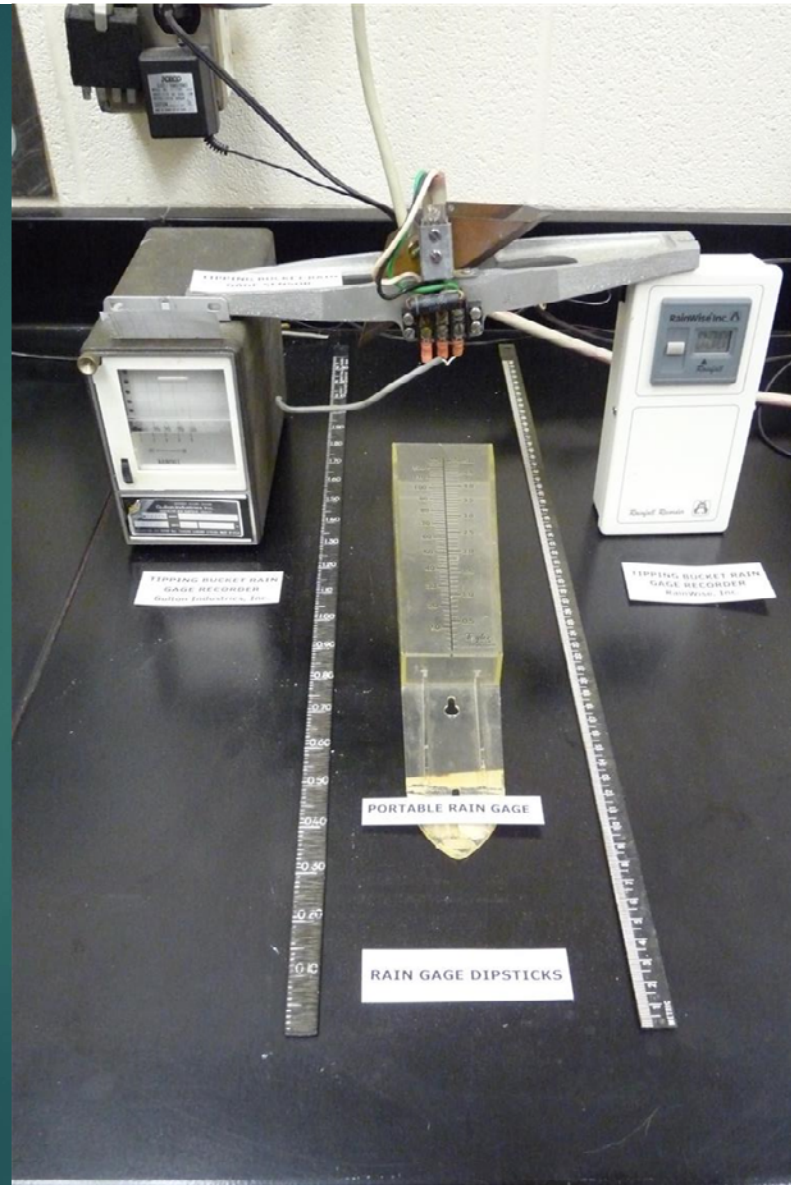








RAIN GAGE DIPSTICKS





MET MICROBAROGRAPH
Met One Inc.

ANEROID BAROMETER
Science Associates, Inc.

ANEROID BAROMETER
Taylor Instruments

ANEROID BAROMETER
This aneroid barometer has been in the
College Heights Weather Station since 1948



ANEROID BAROMETER

This aneroid barometer has been in the College Heights Weather Station since 1948.





ANEROID BAROMETER
Taylor Instruments



ANEROID BAROMETER
Science Associates, Inc.

ANEROID BAROMETER
Science Associates, Inc.



PRESSURE TRANSDUCER
Met One, Inc.

TYPE BAROMETRIC
MODEL 2014-21.8/28.5-HA-3-WH
SERIAL 15817
RANGE 21.8" to 28.5" HG
RESISTANCE 3000 ohms
MAX. DISSIPATION 1/2 WATT

LOW PRES A (BLACK) ——— C (WHITE) ——— HIGH PRES B (RED)

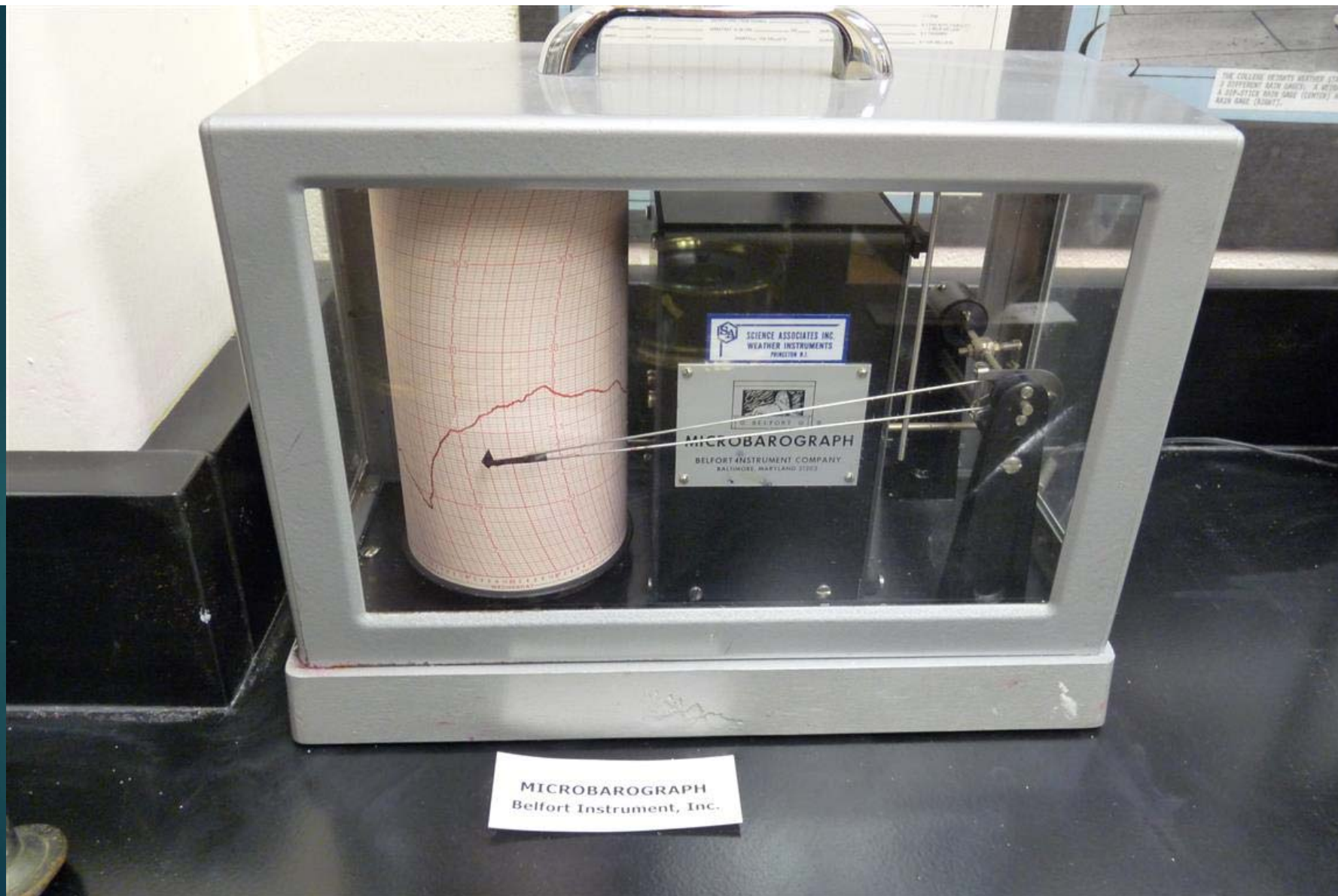
Met One Inc.

PART NO. 090-4 VOLTS

SERIAL 15817 CYCLE

Sunnyvale, California U.S.A.





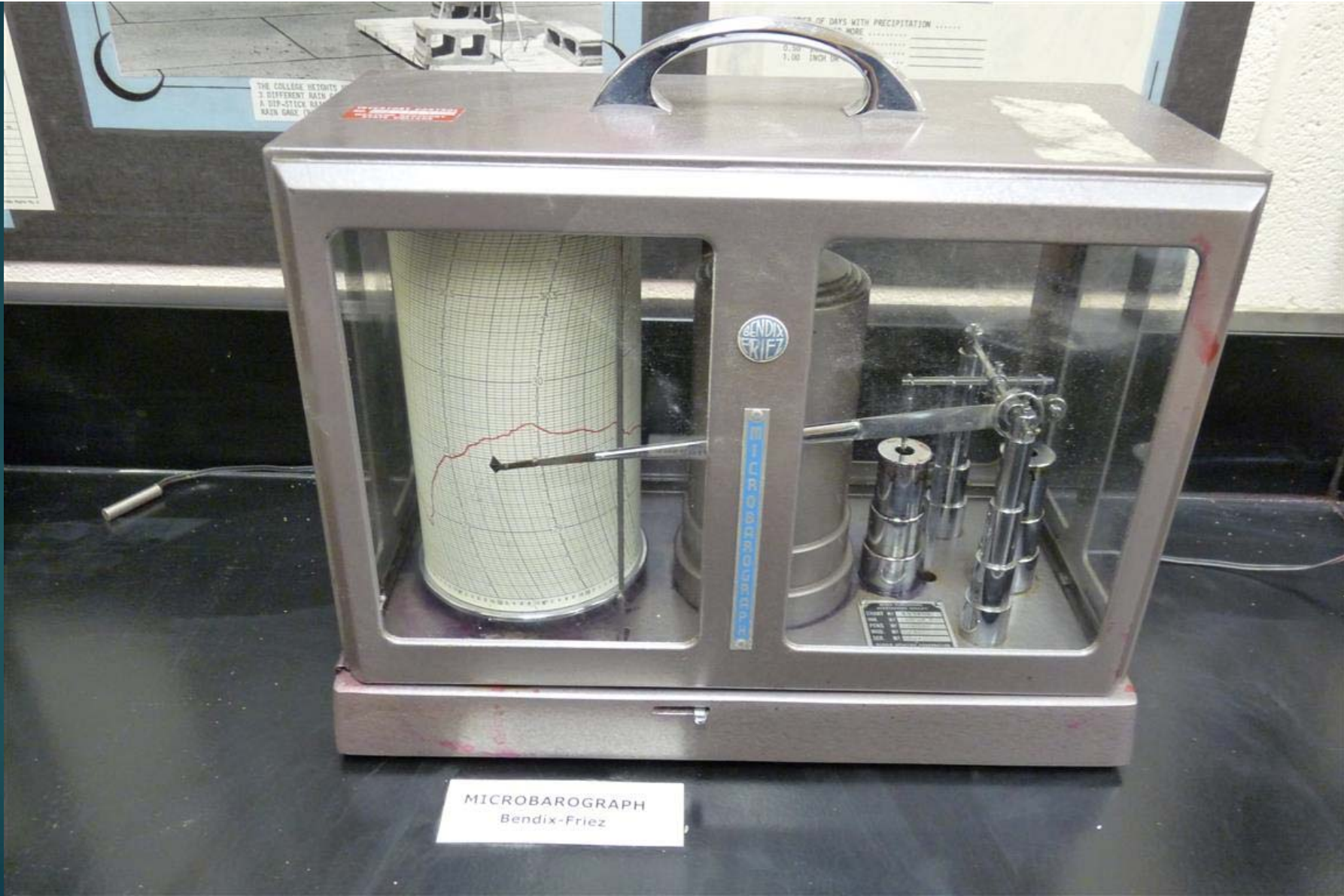
THE COLLEGE HEIGHTS
3 DIFFERENT RAIN
A DIP-STICK RAIN
RAIN GAGE

NUMBER OF DAYS WITH PRECIPITATION
MORE
0.50
1.00 INCH



BAROMETER

MICROBAROGRAPH
Bendix-Friez





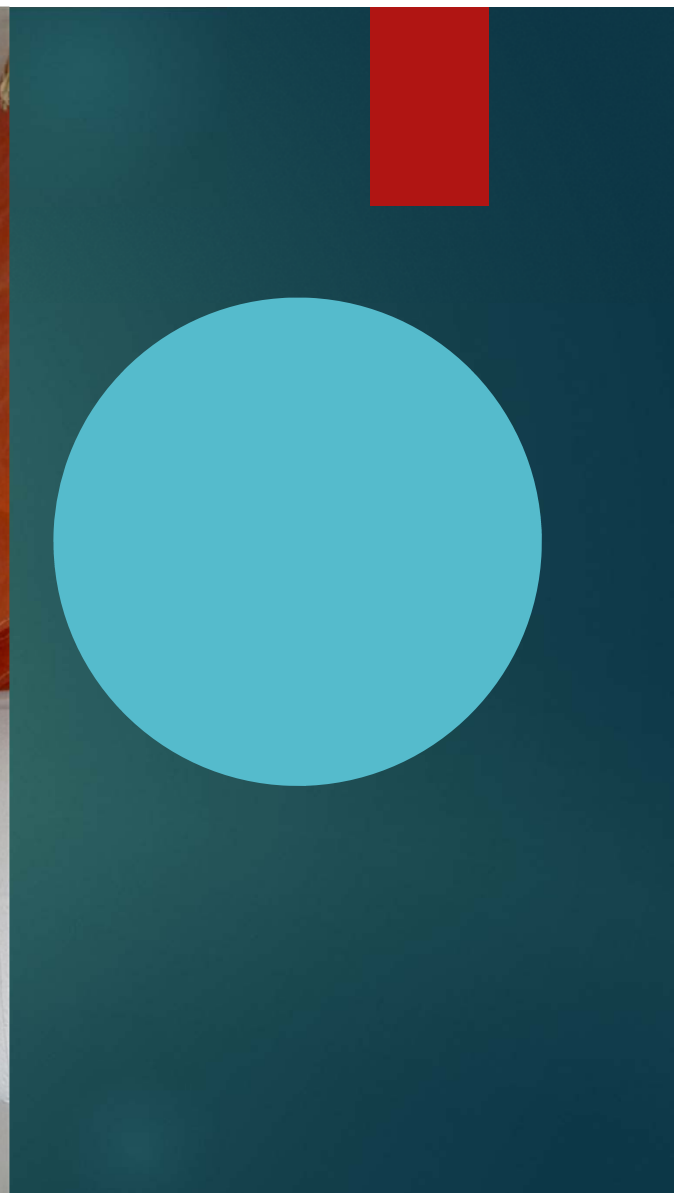


REMOTE TEMPERATURE
INDICATOR
Rohco Products, Co.
Columbus, NE

NOAA WEATHER RADIO
Regency Electronics
Indianapolis, IN

TELEVISION WITH
CABLE CONNECTION
Weather Channel









THE TRANSMITTER

The transmitter of a radio set is the part which sends out the radio waves. It is made up of a number of parts, including a power source, a frequency-determining circuit, and an antenna. The power source is usually a battery or a power supply. The frequency-determining circuit is usually a tuned circuit, which consists of an inductor and a capacitor. The antenna is usually a wire or a set of wires.

The transmitter is usually connected to a power source and an antenna. The power source provides the energy for the transmitter, and the antenna radiates the radio waves. The transmitter is usually connected to a power source and an antenna.



TEMPERATURE SENSOR

The temperature sensor is a probe of simple design which is inserted into the medium whose temperature is to be measured. The sensor is usually made of a material which has a high thermal conductivity and a low thermal expansion coefficient. The sensor is usually connected to a power source and an antenna.



MICROPHONE

The microphone is a device which converts sound waves into electrical signals. It is usually made of a material which has a high thermal conductivity and a low thermal expansion coefficient. The microphone is usually connected to a power source and an antenna.



SIGNAL CONVERTER

The signal converter is a device which converts the signals from the microphone into a form which can be transmitted. It is usually made of a material which has a high thermal conductivity and a low thermal expansion coefficient. The signal converter is usually connected to a power source and an antenna.



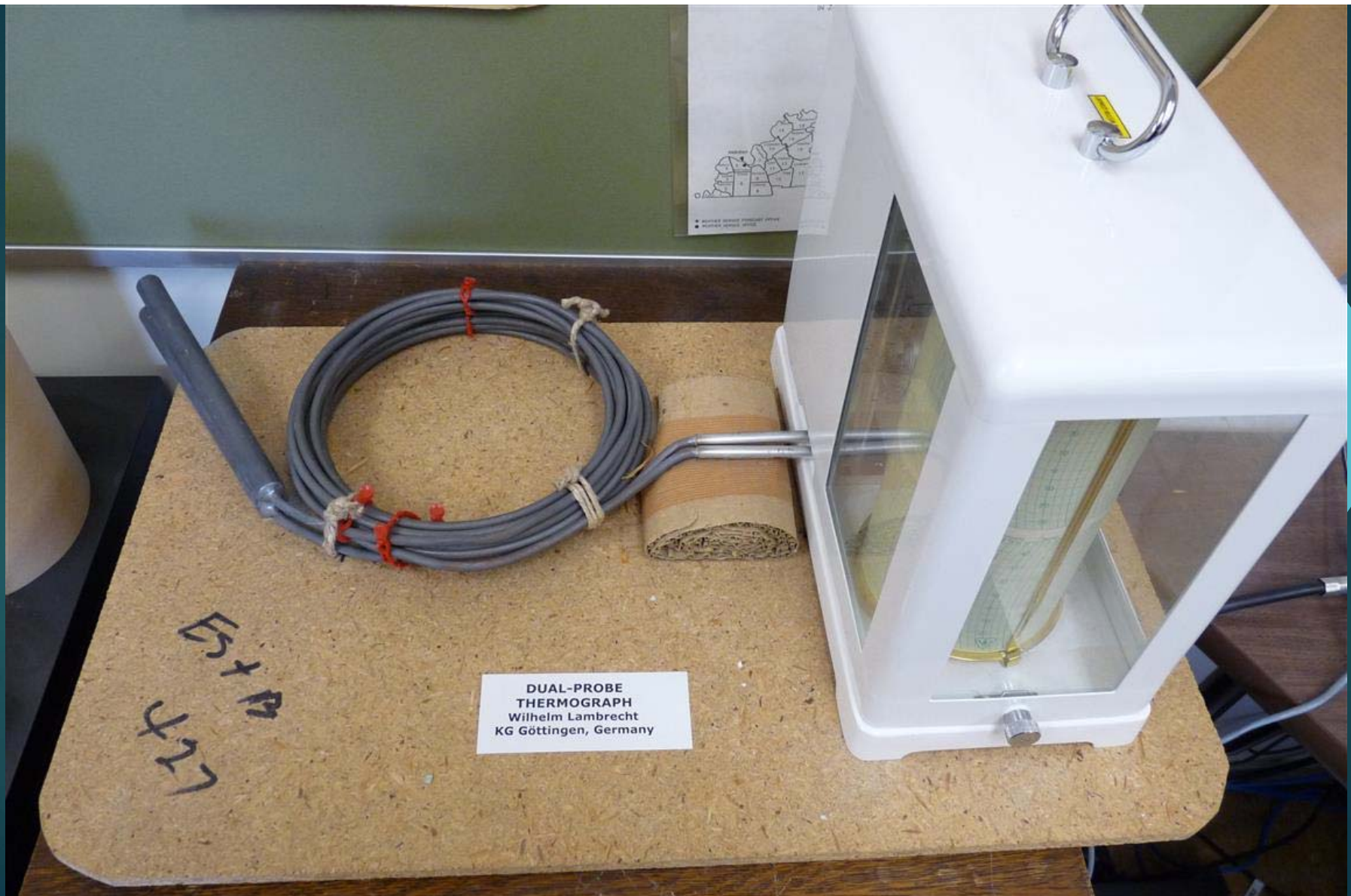
POWER TRANSFORMER

THE COMPONENT PARTS OF A RADIOSET



RADIO RECEIVER

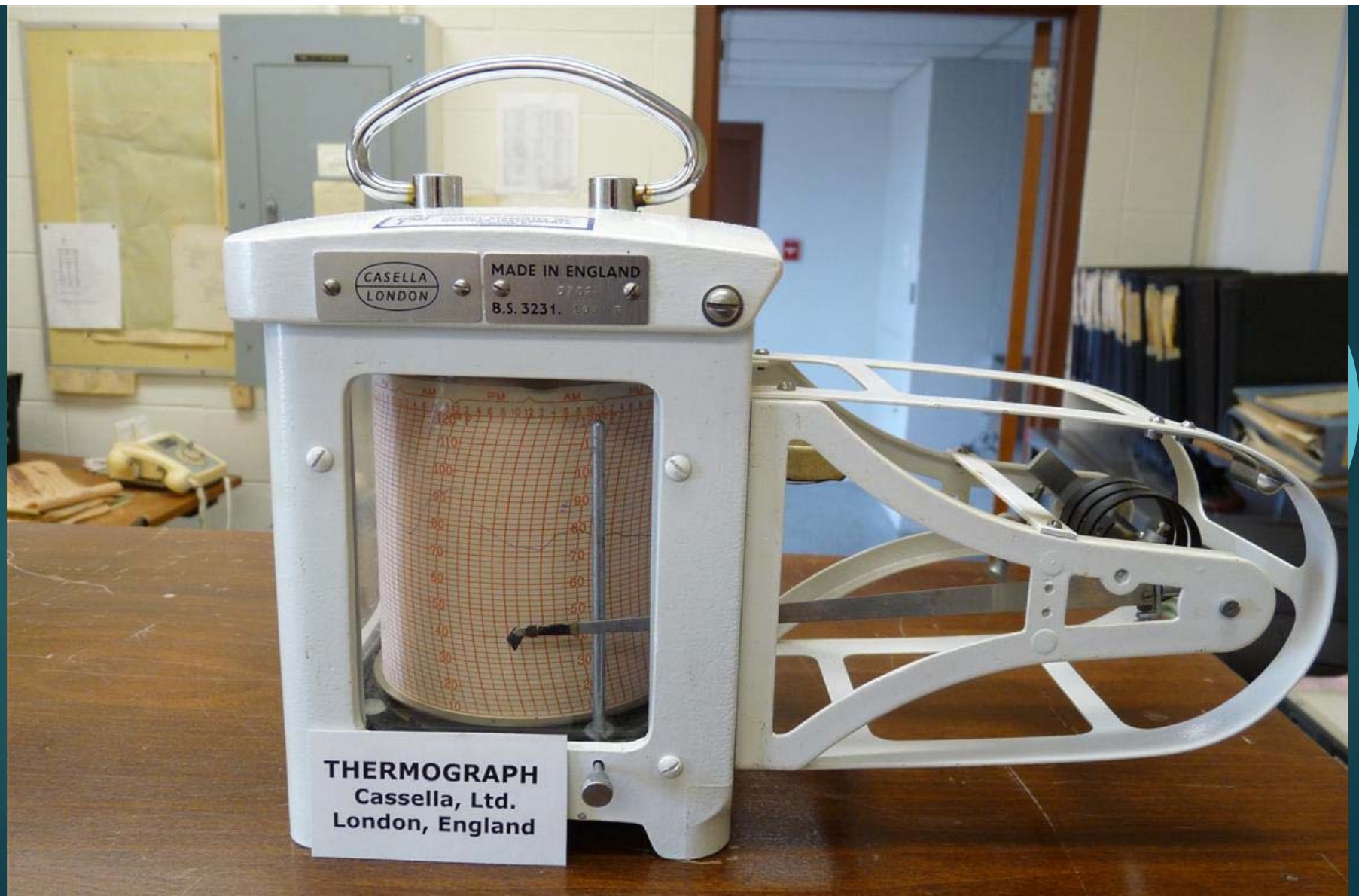
The radio receiver is a device which receives the radio waves and converts them into a form which can be heard. It is usually made of a material which has a high thermal conductivity and a low thermal expansion coefficient. The radio receiver is usually connected to a power source and an antenna.



DUAL-PROBE
THERMOGRAPH
Wilhelm Lambrecht
KG Göttingen, Germany



VARIOUS CHART DRIVE
MECHANISMS
Battery and Spring-Wound
Operated





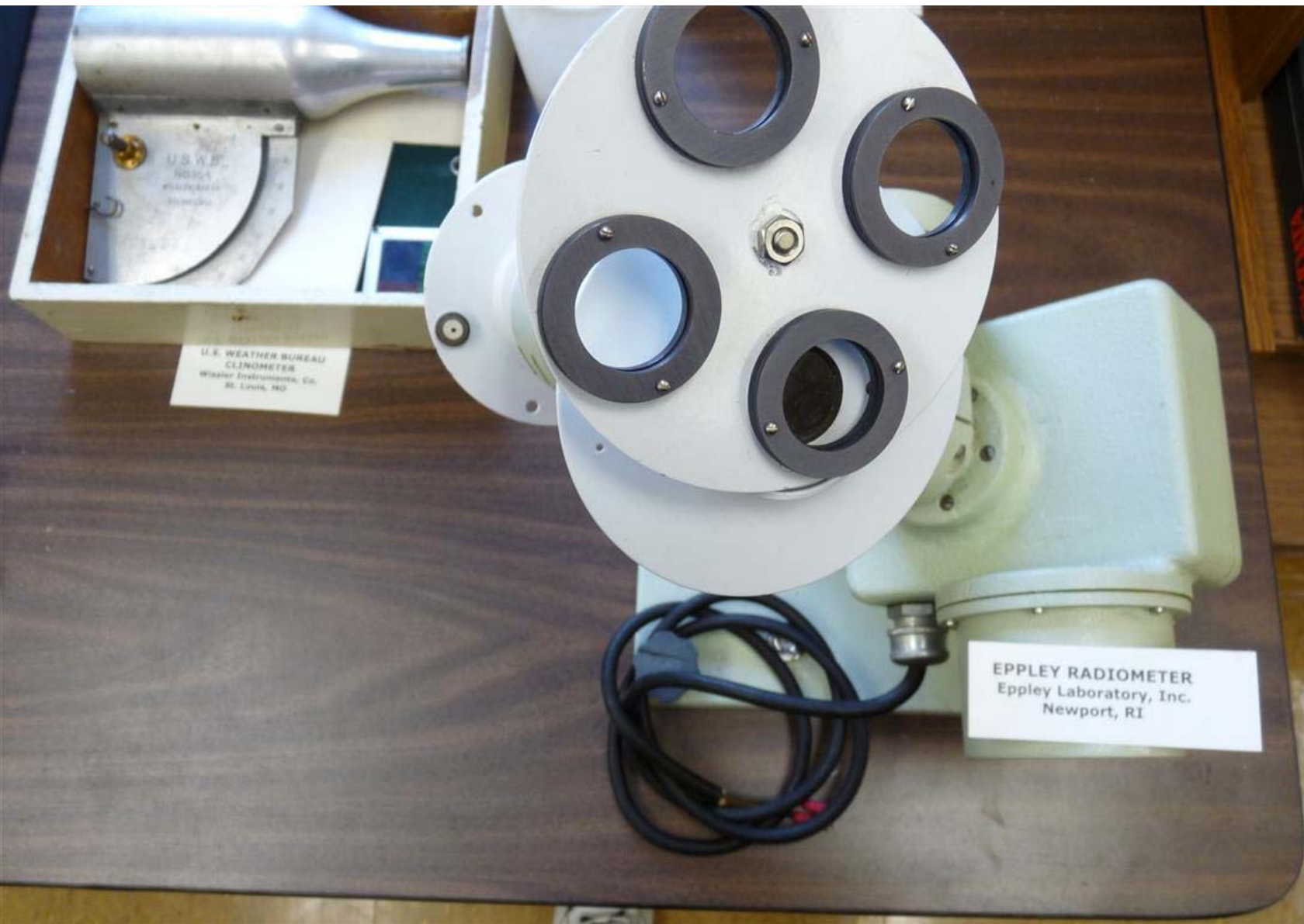


SATELLITE ANTENNA HORN





SATELLITE RECEIVER

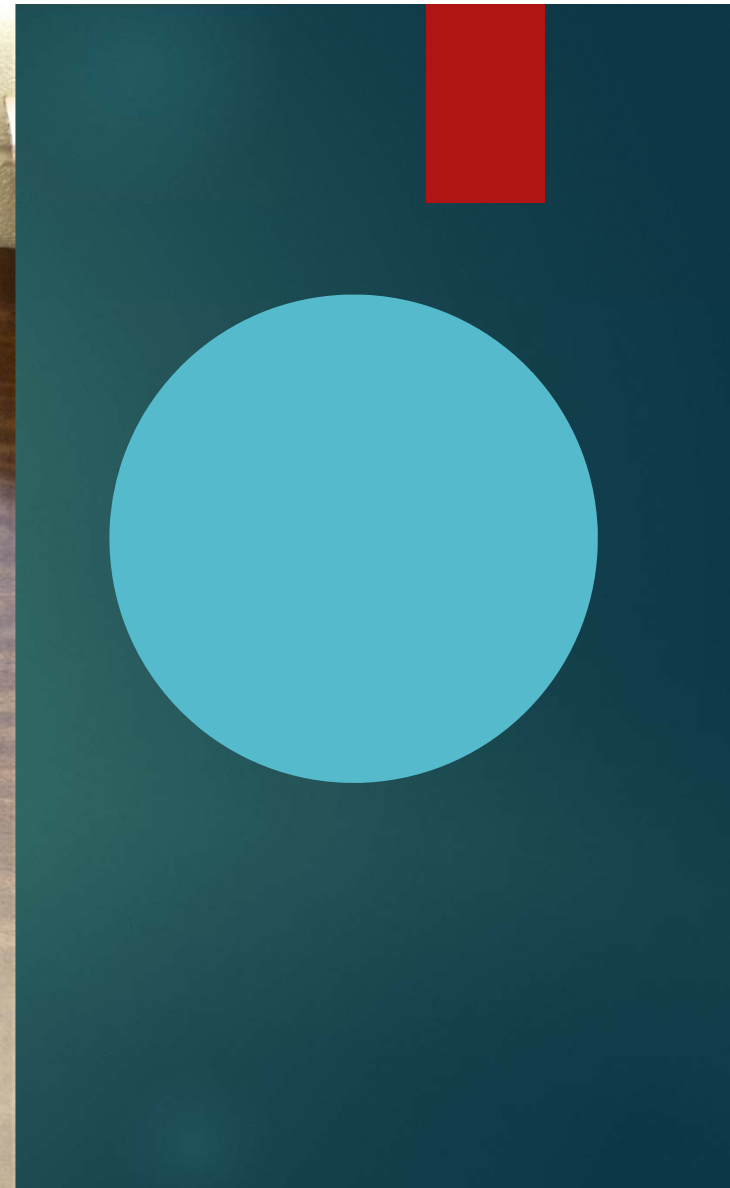




MECHANICAL
PYRANOGRAPH
Weather Measure, Inc.



U.S. WEATHER BUREAU
CLINOMETER
Wissler Instruments, Co.
St. Louis, MO





WEATHER BALLOONS
for Ceiling Visibility



MAXIMUM/MINIMUM
THERMOMETER & STAND



SLING PSYCHROMETER
Weksler Glass
Thermometer Corp.



HYGROMETER
Hair-Fiber Sensor



DIAL THERMOMETER
Taylor Instruments, Co.



**TEMPERATURE
INDICATOR**
Science Associates, Inc.





THERMOGRAPH
Belfort Instrument Co.
Baltimore, MD



HYGROGRAPH
Qualimetrics, Inc.













